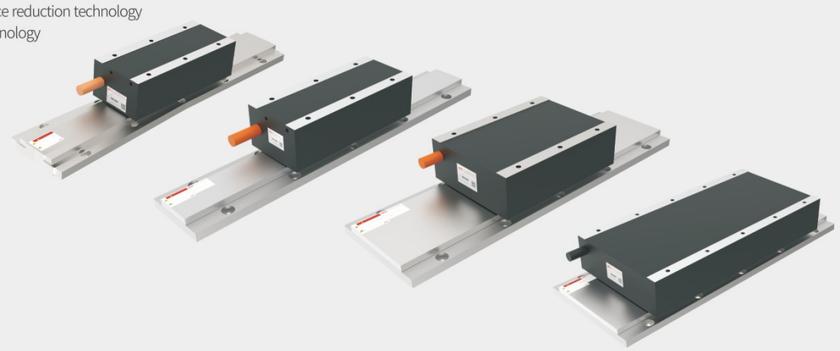
AK2 Series

Iron-core Linear Motor

With iron-core technology, Ultra-low cogging force, High acceleration, High speed

CONTENTS

- Large overall dimensions and high thrust, Iron core for enhanced magnetic field strength
- Iron core with cogging force reduction technology
- Suitable for high dynamic performance applications
- Multi-winding design
- Cogging force reduction technology
- Potting technology



Application Scenarios:

Used in wafer inspection systems, stamping, laser cutting or welding, chip mounters, flip chip die bonders, wire bonders, PCB drilling machines, PCB testers, flat panel displays, medical equipment, and general automation systems.

Ordering Method

AK2 - H25 - 1 - S - 3M

- **Motor Type**: Iron-core Linear Motor
- **Series Code**
- **Number of Coils**
- **Winding code**: SP, BP
- **Cable Length**: Blank: Default cable length of 0.5m; 3m: Moving coil cable length of 3m

Coil Naming Rule

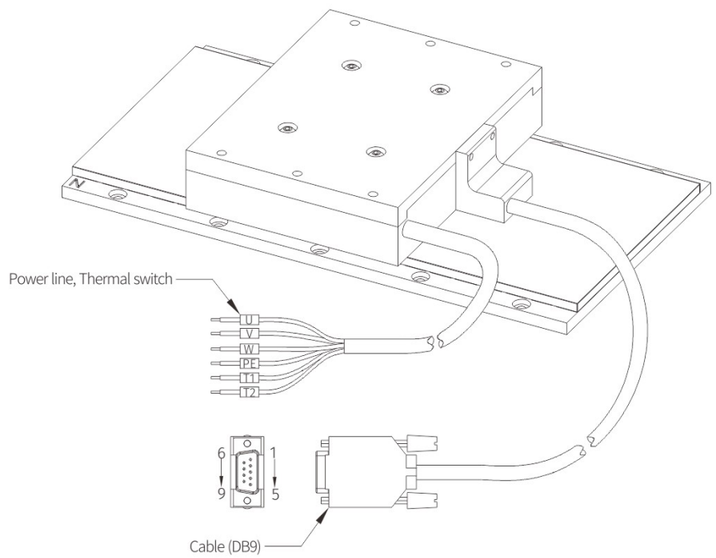
AK2 - H25 - 150MNS

- **Motor Type**
- **Magnetic Rail Width Code**
- **Magnetic Rail Length (Unit: mm)**: 150, 200, 250

Motor wiring diagram

Cable (DB9)		
Pin.	Definition	Color
1	5V	Brown
2	0V	Blue
3	A	Orange
4	B	Purple
5	C	Black
6	-	-
7	-	-
8	-	-
9	-	-

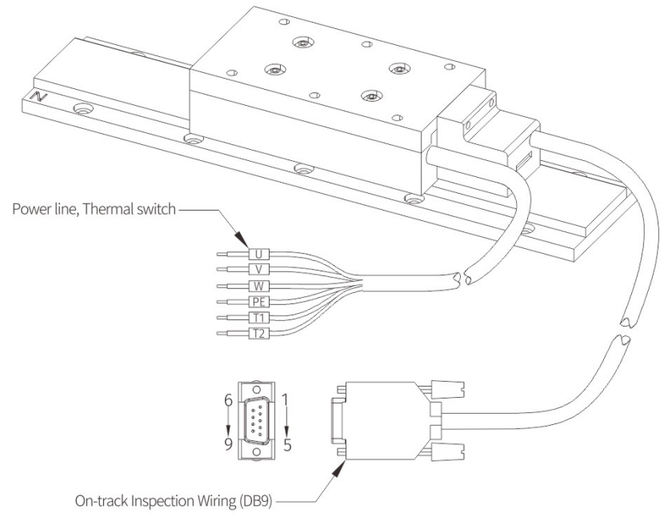
Power line, Thermal switch		
Pin.	Definition	Color
Terminal crimping	U	Brown
Terminal crimping	V	Blue
Terminal crimping	W	Purple
Terminal crimping	PE	Green
Terminal crimping	T1	Brown (thin)
Terminal crimping	T2	Blue (thin)



On-track Inspection Wiring Diagram

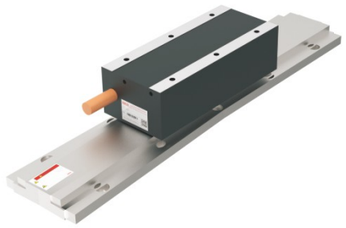
On-track Inspection Wiring (DB9)		
Pin.	Definition	Color
1	0V	Black
2	A+	Brown
3	Z+	Yellow
4	B+	Blue
5	5V	Red
6	A-	Gray
7	Z-	Green
8	B-	White
9	Shielded	-

Power line, Thermal switch		
Pin.	Definition	Color
Terminal crimping	U	Brown
Terminal crimping	V	Blue
Terminal crimping	W	Purple
Terminal crimping	PE	Green
Terminal crimping	T1	Brown (thin)
Terminal crimping	T2	Blue (thin)



AK2-H25 Iron-core Linear Motor

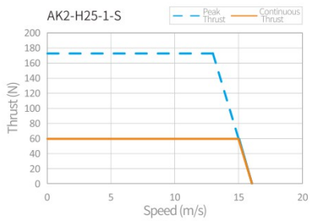
KDH14 Series Module

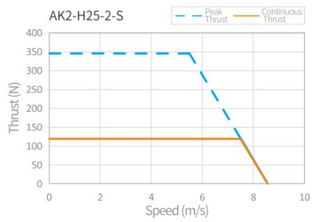


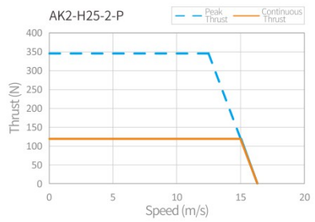
Parameter Table

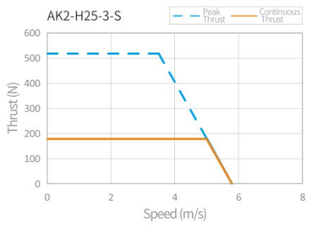
Motor Type	Unit	AK2-H25-1	AK2-H25-2		AK2-H25-3	
Winding code		S	S	P	S	T
Performance Parameters						
Peak Thrust	N	234	468	468	702	702
Continuous Thrust	N	81	162	162	243	243
Maximum Power	W	2249	1903	4325	1817	5969
Continuous Power	W	900	900	1800	900	2700
Forward Attraction Force	N	376	758	758	1137	1137
Electrical Characteristics						
Peak Current	Arms	10.40	10.40	22.80	10.40	30.00
Continuous Current	Arms	3.40	3.40	6.80	3.40	10.00
Back EMF Constant	Vpeak/(M/S)	20.42	42.72	20.42	66.71	20.42
Single-Phase Resistance	Ω	2.50	4.90	1.70	7.47	0.60
Single-Phase Inductance	Mh	15.53	29.84	7.90	43.77	2.79
Motor Constant	N/Arms	22.85	45.70	22.85	68.56	22.85
Time Constant	ms	6.21	6.09	4.65	5.90	4.57
Maximum Coil Temperature	°C	130	130	130	130	130
Maximum Allowable Voltage	VDC	310	310	310	310	310
Mechanical Characteristics						
Mover Length	mm	105	193	193	280	280
Armature Weight	Kg	0.65	1.25	1.25	1.8	1.8
Stator Weight	kg/m	2.8	2.8	2.8	2.8	2.8
Electromagnetic Cycle	mm	25	25	25	25	25

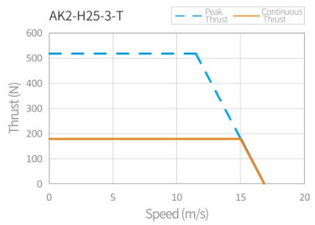
Torque diagram











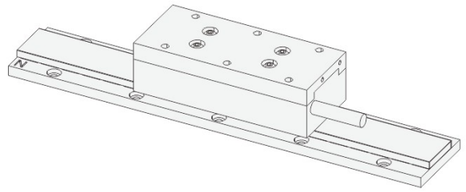
AKD.

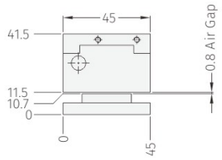
AK2-H25 Iron-core Linear Motor

KDH14 Series Module

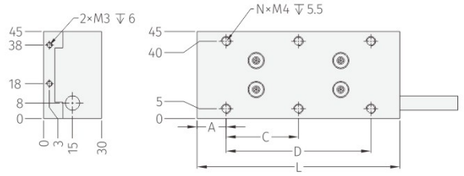
Dimension

Dimensions



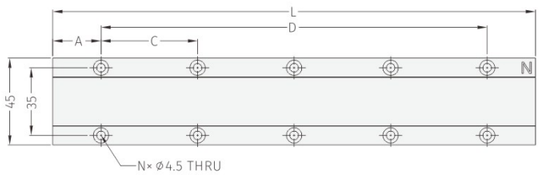


Coil Dimensions



Dimensions	AK2-H25-1	AK2-H25-2	AK2-H25-3
A	15	16.5	20
C	37.5	40	40
D	75	160	240
L	105	193	280
N	6	10	14

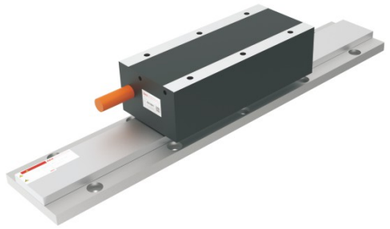
Magnetic Rail Dimensions



Dimensions	AK2-H25-150MNS	AK2-H25-200MNS	AK2-H25-250MNS
A	25	25	25
C	50	50	50
D	100	150	200
L	150	200	250
N	6	8	10

AK2-H55 Iron-core Linear Motor

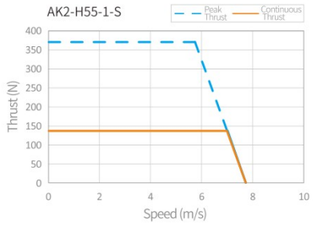
KDH17 Series Module

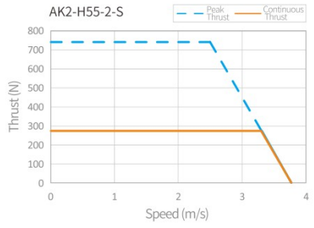


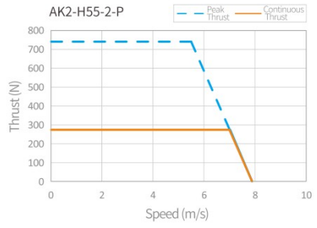
Parameter Table

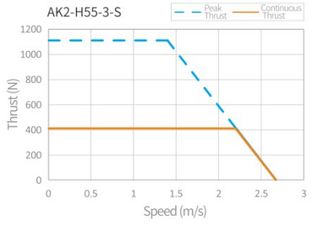
Motor Type	Unit	AK2-H55-1	AK2-H55-2		AK2-H55-3	
Winding code		S	S	P	S	T
Performance Parameters						
Peak Thrust	N	501	1002	1002	1503	1503
Continuous Thrust	N	186	372	372	558	558
Maximum Power	W	2133	1855	4081	1558	5843
Continuous Power	W	966	911	1932	911	2898
Forward Attraction Force	N	640	1280	1280	1920	1920
Electrical Characteristics						
Peak Current	Arms	10.40	10.40	22.80	10.40	30.00
Continuous Current	Arms	3.40	3.40	6.40	3.40	10.00
Back EMF Constant	Vpeak/(M/S)	51.23	92.88	51.23	147.51	51.23
Single-Phase Resistance	Ω	5.20	7.20	1.80	13.13	1.31
Single-Phase Inductance	Mh	30.02	59.67	11.93	88.72	5.30
Motor Constant	N/Arms	54.04	108.42	54.04	162.12	54.04
Time Constant	ms	5.77	8.29	6.62	5.19	5.19
Maximum Coil Temperature	°C	130	130	130	130	130
Maximum Allowable Voltage	VDC	310	310	310	310	310
Mechanical Characteristics						
Mover Length	mm	105	193	193	280	280
Armature Weight	Kg	1.2	2.2	2.2	3.3	3.3
Stator Weight	kg/m	5.1	5.1	5.1	5.1	5.1
Electromagnetic Cycle	mm	25	25	25	25	25

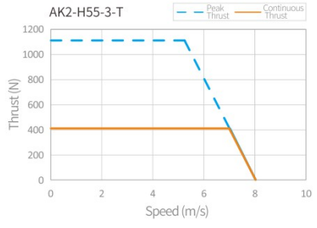
Torque diagram











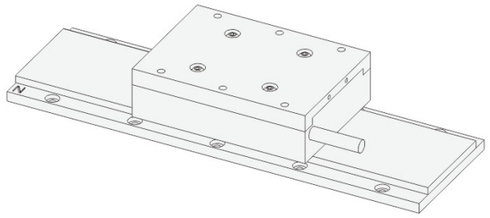
AKD®

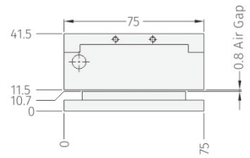
AK2-H55 Iron-core Linear Motor

KDH17 Series Module

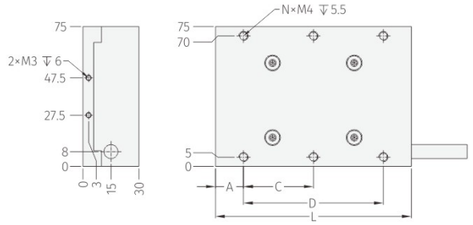
Dimension

Dimensions



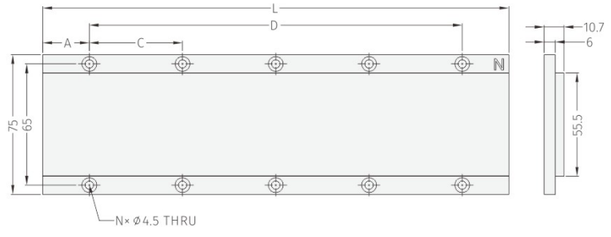


Coil Dimensions

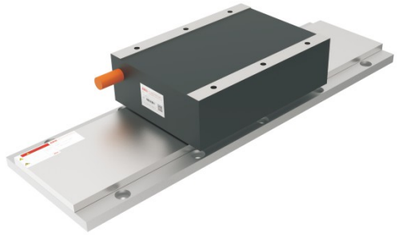


Dimensions	AK2-H55-1	AK2-H55-2	AK2-H55-3
A	15	16.5	20
C	37.5	40	40
D	75	160	240
L	105	193	280
N	6	10	14

Magnetic Rail Dimensions



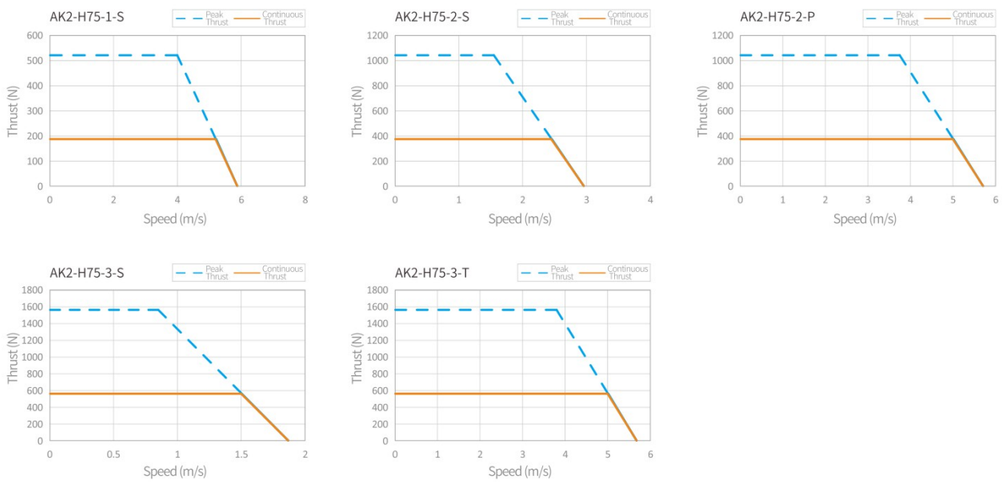
Dimensions	AK2-H55-150MNS	AK2-H55-200MNS	AK2-H55-250MNS
A	25	25	25
C	50	50	50
D	100	150	200
L	150	200	250
N	6	8	10



Parameter Table

Motor Type	Unit	AK2-H75-1	AK2-H75-2		AK2-H75-3	
Winding code		S	S	P	S	T
Performance Parameters						
Peak Thrust	N	704	1408	1408	2112	2112
Continuous Thrust	N	255	510	510	765	765
Maximum Power	W	2088	1618	3915	1331	5951
Continuous Power	W	983	926	1890	851	2835
Forward Attraction Force	N	873	1746	1746	2619	2619
Electrical Characteristics						
Peak Current	Arms	10.40	10.40	20.80	10.40	30.00
Continuous Current	Arms	3.40	3.40	6.40	3.40	10.00
Back EMF Constant	Vpeak/(M/S)	67.18	134.56	67.18	201.69	67.18
Single-Phase Resistance	Ω	73.89	147.78	73.89	221.67	73.89
Single-Phase Inductance	Mh	5.60	10.90	2.50	16.17	2.10
Motor Constant	N/Arms	38.94	77.94	11.62	115.62	12.90
Time Constant	ms	6.95	7.15	5.40	5.11	5.11
Maximum Coil Temperature	°C	130	130	130	130	130
Maximum Allowable Voltage	VDC	310	310	310	310	310
Mechanical Characteristics						
Mover Length	mm	105	193	193	280	280
Armature Weight	Kg	1.58	2.92	2.92	4.25	4.25
Stator Weight	kg/m	6.6	6.6	6.6	6.6	6.6
Electromagnetic Cycle	mm	25	25	25	25	25

Torque diagram

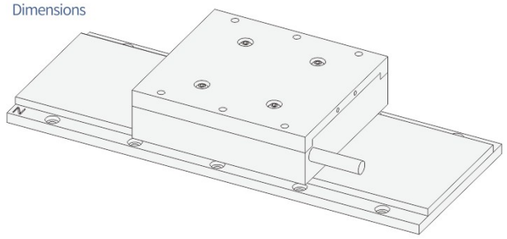


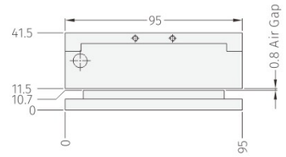
AKD

AK2-H75 Iron-core Linear Motor KDH22 Series Module

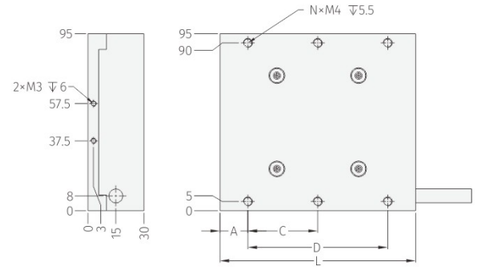
Dimension

Dimensions



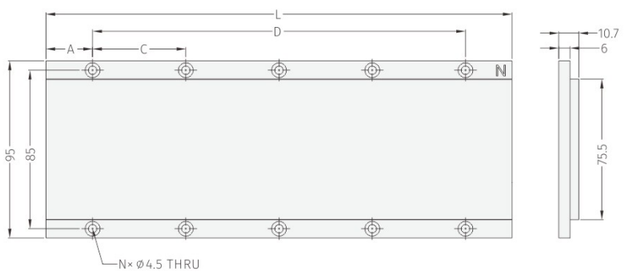


Coil Dimensions



Dimensions	AK2-H75-1	AK2-H75-2	AK2-H75-3
A	15	16.5	20
C	37.5	40	40
D	75	160	240
L	105	193	280
N	6	10	14

Magnetic Rail Dimensions

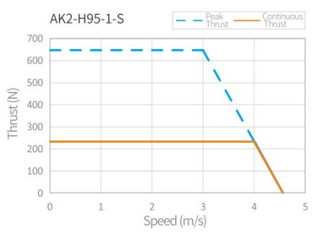


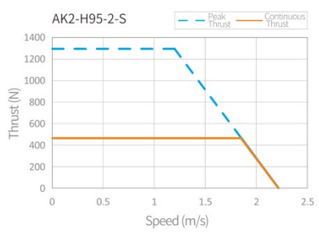
Dimensions	AK2-H75-150MNS	AK2-H75-200MNS	AK2-H75-250MNS
A	25	25	25
C	50	50	50
D	100	150	200
L	150	200	250
N	6	8	10

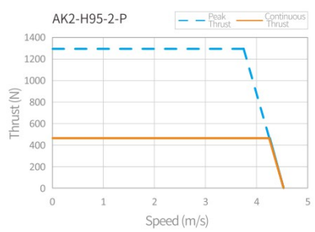
Parameter Table

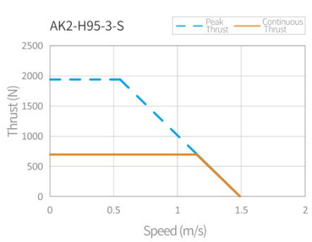
Motor Type	Unit	AK2-H95-1	AK2-H95-2		AK2-H95-3	
Winding code		S	S	P	S	T
Performance Parameters						
Peak Thrust	N	648	1296	1296	1944	1944
Continuous Thrust	N	234	468	468	702	702
Maximum Power	W	1944	1555	4860	1069	5832
Continuous Power	W	936	866	1989	807	2808
Forward Attraction Force	N	1105	2210	2210	3315	3315
Electrical Characteristics						
Peak Current	Arms	10.3	10.3	10.3	10.3	30.87
Continuous Current	Arms	3.22	3.22	3.22	3.2	9.66
Back EMF Constant	N/Arms	72.02	144.04	72.02	216.06	72.02
Back EMF Constant	Vpeak/ (m/s)	63.56	127.12	63.56	190.68	63.56
Single-Phase Resistance	Ohms	5.2	10.2	2.1	15.5	1.4
Single-Phase Inductance	mH	27.61	56.64	13.9	85.55	9.27
Time Constant	ms	5.36	5.57	6.62	5.51	6.62
Motor Constant	N/Sqrt (W)	28.95	40.95	40.95	50.15	50.15
Maximum Coil Temperature	°C	130	130	130	130	130
Maximum Allowable Voltage	VDC	310	310	310	310	310
Mechanical Characteristics						
Mover Length		105	193	193	280	280
Armature Weight		1.8	3.4	3.4	4.8	4.6
Stator Weight		8.2	8.2	8.2	8.2	8.2
Electromagnetic Cycle		25	25	25	25	25

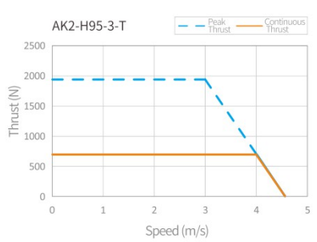
Torque diagram





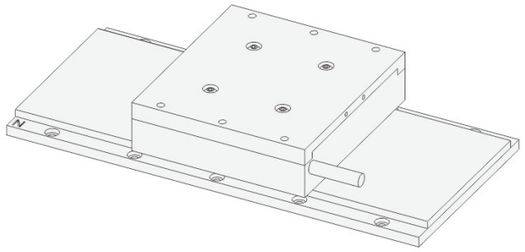


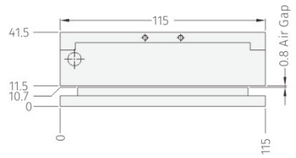




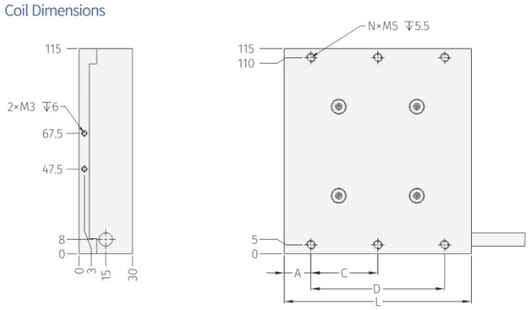
Dimension

Dimensions



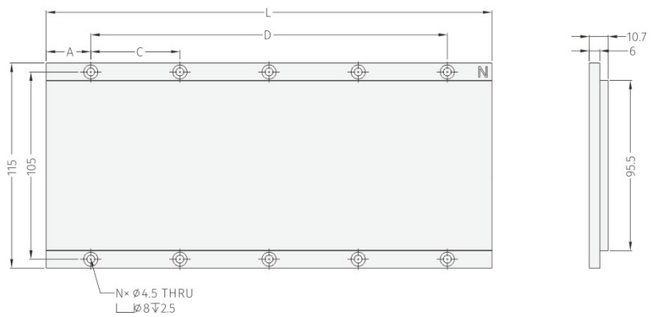


Coil Dimensions



Dimensions	AK2-H95-1	AK2-H95-2	AK2-H95-3
A	15	16.5	20
C	37.5	40	40
D	75	160	240
L	105	193	280
N	6	10	14

Magnetic Rail Dimensions



Dimensions	AK2-H95-150MNS	AK2-H95-200MNS	AK2-H95-250MNS
A	25	25	25
C	50	50	50
D	100	150	200
L	150	200	250
N	6	8	10

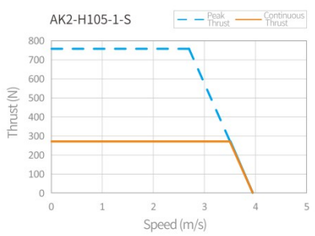
AK2-H105 Iron-core Linear Motor

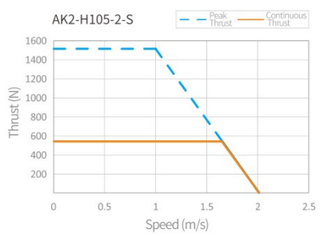
KDH27/30 Series Module

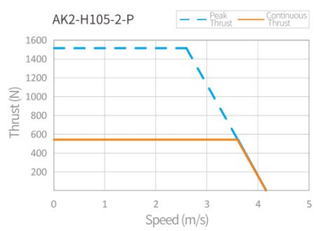
Parameter Table

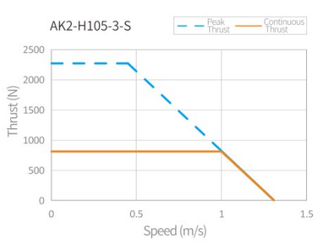
Motor Type	Unit	AK2-H105-1	AK2-H105-2		AK2-H105-3	
Winding code		S	S	P	S	T
Performance Parameters						
Peak Thrust	N	759	1518	1518	2277	2277
Continuous Thrust	N	273	546	546	819	819
Maximum Power	W	2049	1518	3947	1025	6034
Continuous Power	W	956	901	1966	819	2867
Forward Attraction Force	N	1221	2442	2442	3663	3663
Electrical Characteristics						
Peak Current	Arms	10.28	10.28	20.56	10.28	30.84
Continuous Current	Arms	3.38	3.38	6.76	3.38	10.14
Back EMF Constant	N/Arms	79.59	159.18	79.59	238.77	79.59
Back EMF Constant	Vpeak/ (m/s)	70.25	140.50	70.25	210.75	70.25
Single-Phase Resistance	Ohms	5.8	11.4	2.9	16.9	1.9
Single-Phase Inductance	mH	31.46	63.14	15.73	93.55	10.38
Time Constant	ms	5.47	5.52	5.46	5.53	5.55
Motor Constant	N/Sqrt (W)	27.50	33.89	33.89	47.64	47.64
Maximum Coil Temperature	°C	130	130	130	130	130
Maximum Allowable Voltage	VDC	310	310	310	310	310
Mechanical Characteristics						
Mover Length	mm	105	193	193	280	280
Armature Weight	Kg	2	4.3	4.3	5.9	5.9
Stator Weight	Kg/m	8.9	8.9	8.9	8.9	8.9
Electromagnetic Cycle	mm	25	25	25	25	25

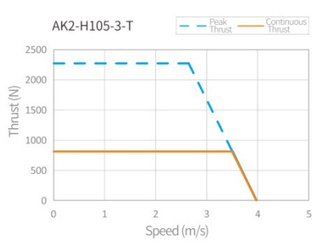
Torque diagram











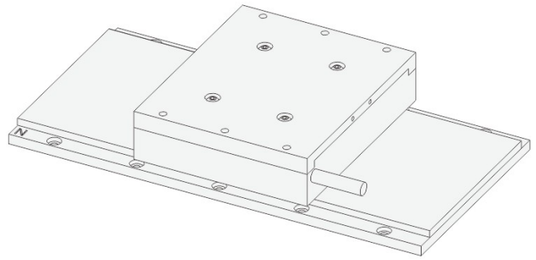
AKD®

AK2-H105 Iron-core Linear Motor

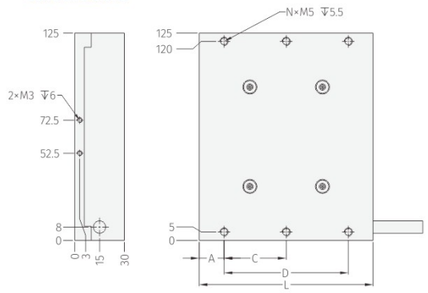
KDH27/30 Series Module

Dimension

Dimensions

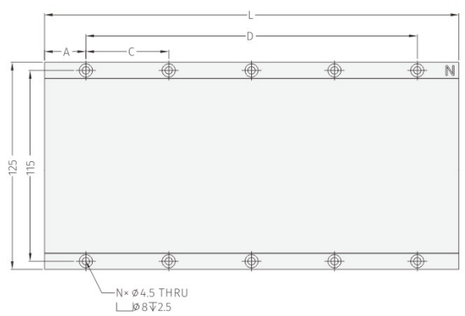


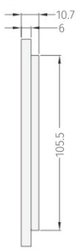
Coil Dimensions



Dimensions	AK2-H105-1	AK2-H105-2	AK2-H105-3
A	15	16.5	20
C	37.5	40	40
D	75	160	240
L	105	193	280
N	6	10	14

Magnetic Rail Dimensions





Dimensions	AK2-H105-150MNS	AK2-H105-200MNS	AK2-H105-250MNS
A	25	25	25
C	50	50	50
D	100	150	200
L	150	200	250
N	6	8	10