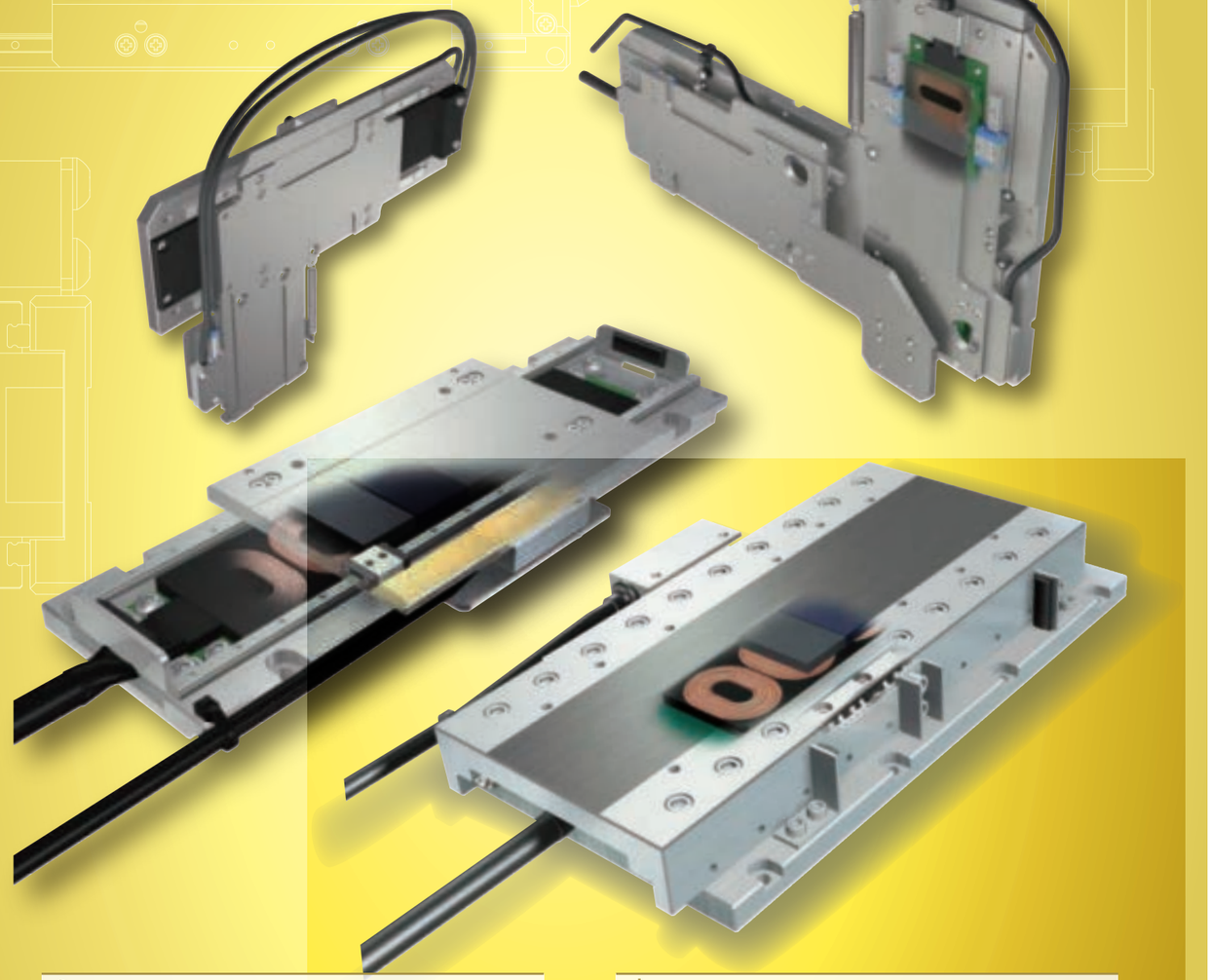
NT
(NT…V, NT…H, NT…XZ, NT…XZH)

NT

Linear motor

Linear motion



Major product specifications

Driving method	Linear motor
Linear motion rolling guide	Linear Way(ball type) Crossed Roller Way(roller type)
Built-in lubrication part	Lubrication part "C-Lube" is built-in (except for NT38V, NT55V and NT···H)
Material of table and bed	High carbon steel
Sensor	Provided as standard

Accuracy

unit: mm

Positioning repeatability	±0.0001～0.0005
Positioning accuracy	–
Lost motion	–
Parallelism in table motion A	–
Parallelism in table motion B	–
Attitude accuracy	–
Straightness	–
Backlash	–

Ultracompact, state-of-the-art linear motor table NT series!

Nano Linear NT is a moving magnet type linear motor table with extremely low profile.
For guiding parts of the moving table, Linear Way or Crossed Roller Way well-established in the area of miniature linear motion rolling guides is used in combination with linear motor and high-resolution linear encoder to realize highly accurate positioning.
Thanks to adoption of high-performance neodymium magnet, large thrust force can be acquired and therefore high-speed and highly responsive positioning is possible, despite its very small body. In addition, high cleanliness is realized as the mechanical contact part is only the linear motion rolling guide thanks to adoption of a landmark driving method without moving cables.

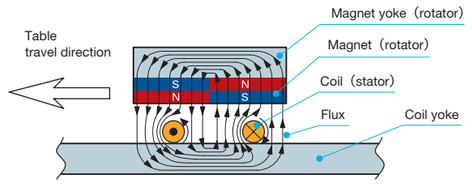
Nano Linear NT specifications list

Model and size		Standard type NT···V													
		NT38V10		NT38V18		NT55V25		NT55V65		NT80V25		NT80V65		NT80V120	
Sectional shape		38, 11, 26				55, 14				80, 16					
Maximum thrust	N	3		3		25		25		36		36		36	
Rated thrust	N	0.6		0.8		7		7		8		8		8	
Maximum load mass	kg	0.5		0.5		5		5		5		5		5	
Effective stroke length	mm	10		18		25		65		25		65		120	
Resolution	μm	0.1	0.5	0.1	0.5	0.1	0.5	0.1	0.5	0.1	0.5	0.1	0.5	0.1	0.5
Maximum speed	mm/s	270	500	270	500	270	1000	1300	270	1000	1300	270	1000	1300	270	1000	1300	270	1000	1300	270	1000	1300
Positioning repeatability	μm	±0.5		±0.5		±0.5		±0.5		±0.5		±0.5		±0.5	

Model and size		High accuracy type NT···H				Pick and place unit NT···XZ				High thrust pick and place unit NT···XZH			
		NT88H25		NT88H65		NT80XZ4510				NT90XZH2510			
Sectional shape		88, 25				210, 18, 5, 153, 18				(268), 260, 29.5, 160, (168), 29.5			
						X-axis		Z-axis		X-axis		Z-axis	
Maximum thrust	N	25		25		50		25		70		70	
Rated thrust	N	5		5		10		2.5		Natural air cooling: 16 Air cooling: 20		Natural air cooling: 16 Air cooling: 20	
Maximum load mass	kg	5		5		–		0.1		–		0.2	
Effective stroke length	mm	25		65		45		10		25		10	
Resolution	μm	0.01	0.05	0.01	0.05	0.1	0.5	0.1	0.5	0.1	0.5	0.1	0.5
Maximum speed	mm/s	90	400	90	400	270	1000	1300	270	800	800	270	1000	1300	270	1000	1000
Positioning repeatability	μm	±0.1		±0.1		±0.5		±0.5		±0.5		±0.5	

Operating principle of Nano Linear NT

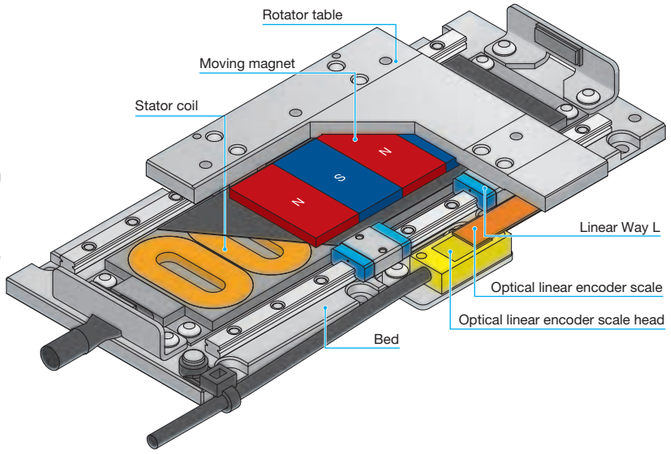
Nano Linear NT is structured with magnet and optical linear encoder scale deployed as a rotator, and an air-core coil and optical linear encoder scale head deployed as a stator within its compact body. As indicated in the right figure, the coil is subject to horizontal force due to flux that always works in vertical direction by the magnet and coil yoke, and rotational flux that is generated around the coil by the coil current (Fleming's left-hand rule). By switching the coil current to certain direction corresponding to the flux direction, continuous thrust force in a certain direction can be obtained and linear motions of the rotator is maintained. Traveling and accurate positioning are performed by acceleration control by current amount and feedback by linear encoder.



1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

NT···V [Standard type]

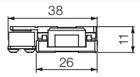
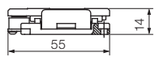
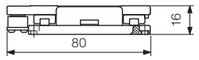
NT···V is a linear motor table with excellent cost effectiveness realized by use of Linear Way L for miniature linear motion rolling guide in the cable guiding parts, reduction of number of parts and review of parts shapes. NT38V10, the smallest in the series, is only 11mm in sectional height, 38mm in table width and 62mm in overall length. It contributes further miniaturization of positioning mechanism. Motion network EtherCAT compatible driver and SSCNETⅢ compatible driver are also available and smoother and higher speed and accuracy motions are realized by streamlined wiring.



Points

1 ● Ultracompact

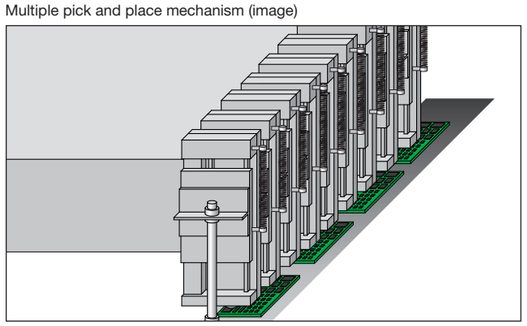
We pursued further miniaturization thoroughly. Especially, NT38V10, the smallest in the series, is only 11mm in sectional height, 38mm in table width and 62mm in overall length. The occupied space is not increased even when many tables are layered, so further miniaturization of the positioning mechanism is promoted.

Model and size	NT38V10	NT38V18	NT55V25	NT55V65	NT80V25	NT80V65	NT80V120
Sectional shape (mm)							

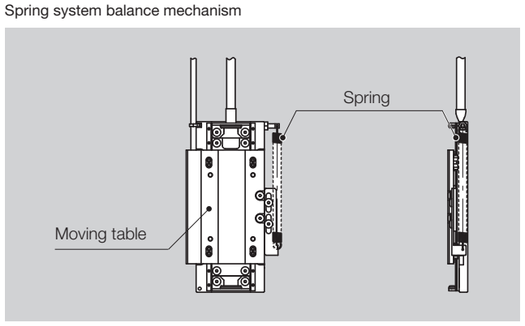
2 ● Compatible with vertical mounting structure

Falling of moving table in power shutdown is prevented by integration of individual spring system balance mechanism. Making use of low profile and compact characteristics of NT···V, multiple pick and place mechanism can be established.

Multiple pick and place mechanism (image)



Spring system balance mechanism



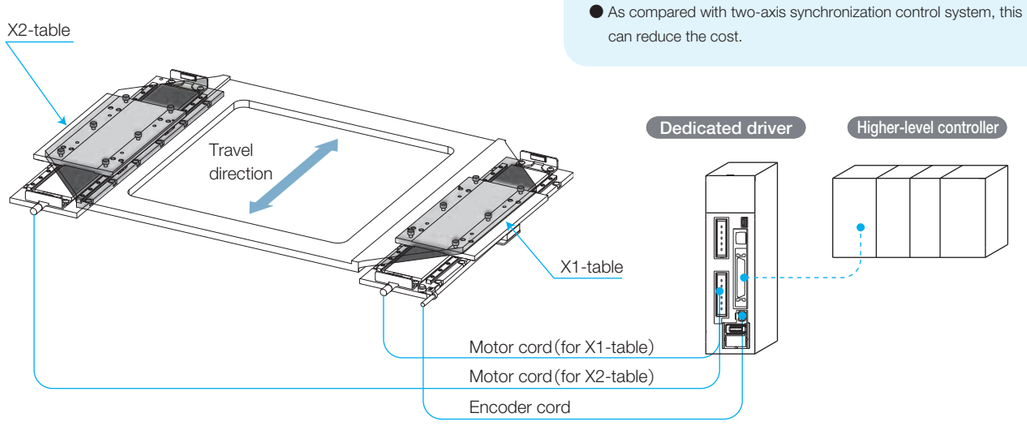
Remark: Vertical mounting structure is prepared based on respective usages. As we select spring according to your use conditions, please contact IKO.

3 ● Two-axis parallel operation

Performing rigid-connection of two units of NT···V arranged in parallel and driving with a single specific driver enables high thrust force and stable attitude accuracy.

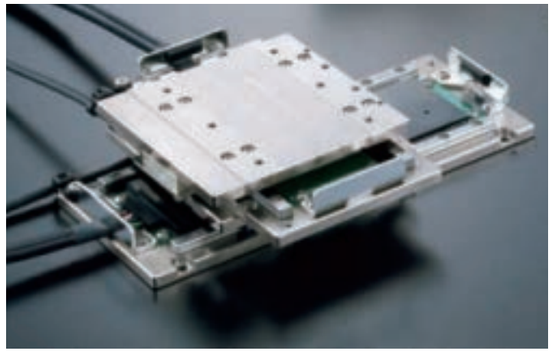
Features of two-axis parallel operation

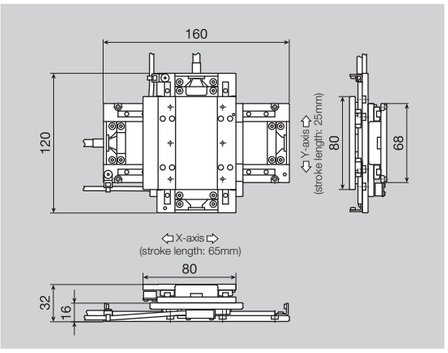
- Large thrust force can be obtained by two-axis driving.
- Driving right and left tables can minimize the table delay and flame torsion.
- Table delay and flame torsion are minimized, which ensures high positioning accuracy.
- As compared with two-axis synchronization control system, this can reduce the cost.



4 ● XY two-axis combination specification

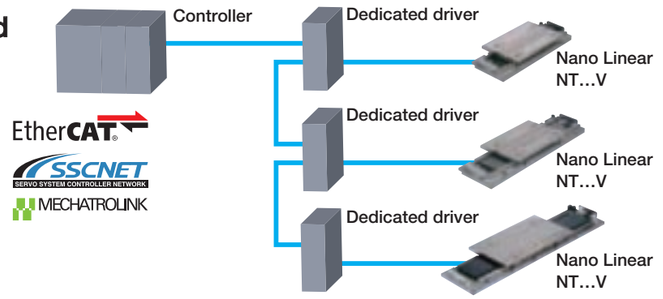
Two units of NT80V can be used in combination without any special attachment and XY-table with low profile can be easily established.





5 ● Motion network is supported

Drivers compatible with motion network EtherCAT, SSCNETⅢ, and MECHATROLINK are also available, so an advanced system with streamlined wiring can be configured.

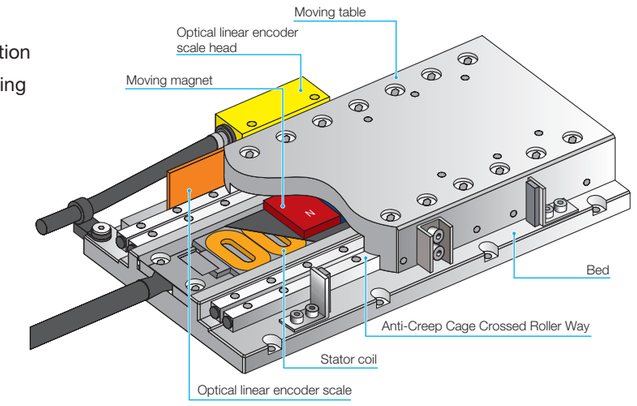


Remark: EtherCAT® is registered trademark and patented technology, licensed by BeckhoffAutomation GmbH, Germany.
SSCNETⅢ is a motion network communication system for servo system control developed by Mitsubishi Electric Corporation.
MECHATROLINK is an open field network controlled by MECHATROLINK Members Association.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

NT···H [High accuracy type]

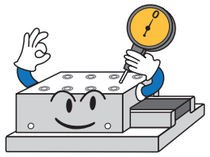
NT···H is a high-accuracy linear motor table that has realized high rigidity and smooth motions without pulsation comparative with air static pressure bearing by positioning accuracy and running straightness below 1 μm, using roller type Anti-Creep Cage Crossed Roller Way in the table guiding parts.

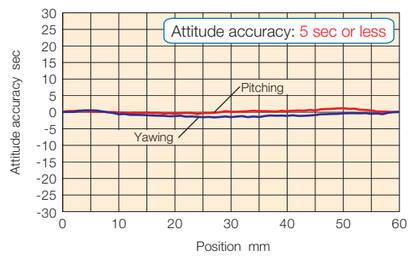


Points

1 ● High attitude accuracy

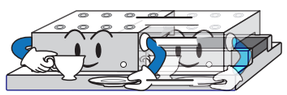
Combination of parts processed with high accuracy and Anti-Creep Cage Crossed Roller Way realizes attitude accuracy of 5 sec or less. Variations in attitude due to movement is minimized, which ensures high positioning repeatability.

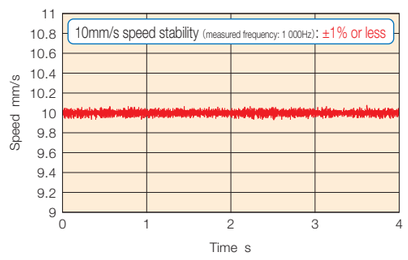




2 ● High speed stability

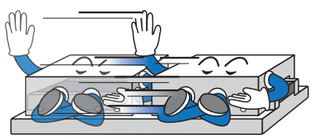
Speed stability is improved further thanks to smooth-motion Crossed Roller Way, coreless moving magnet type linear motor and high-performance servo driver.

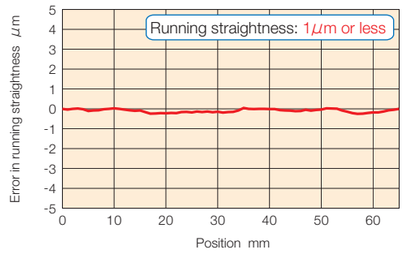




3 ● High running accuracy

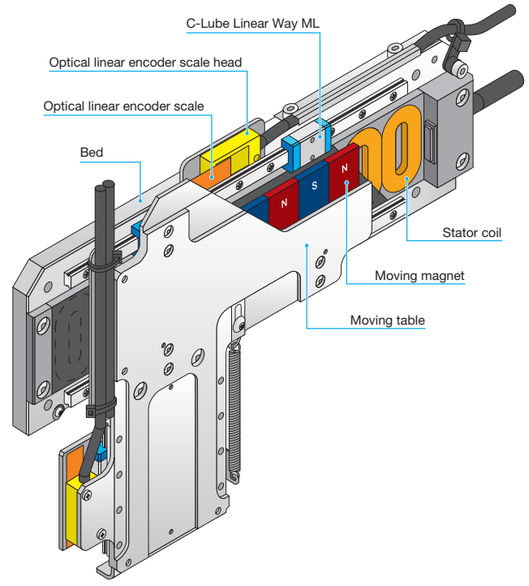
High running accuracy as good as less than 1 μm running straightness is realized by precise finishing and assembly of components.





NT···XZ [Pick and place unit]

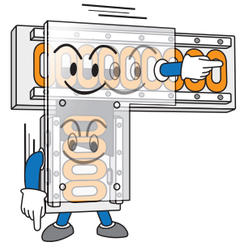
NT···XZ is a linear motor drive pick and place unit with ultra thin profile with 18mm thickness, realized by integrating X-axis moving table and Z-axis bed, using C-Lube Linear Way ML for miniature linear motion rolling guide in the table guiding parts. By entering a positioning program, you may set flexible operation patterns and change strokes according to works easily.



Points

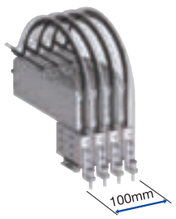
1 ● High-tact positioning

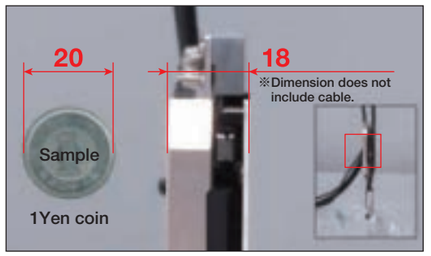
Pick and place unit of unparalleled structure with linear motor drive. Optical linear encoders are installed on both axes to realize accurate and high-tact positioning.



2 ● Ultrathin and space saving

Ultra thin profile of 18mm thickness is realized by integrating X-axis moving table and Z-axis bed. Parallel install of four units in a space of 100mm width is possible, and such space saving arrangement contributes to improvement of efficiency.





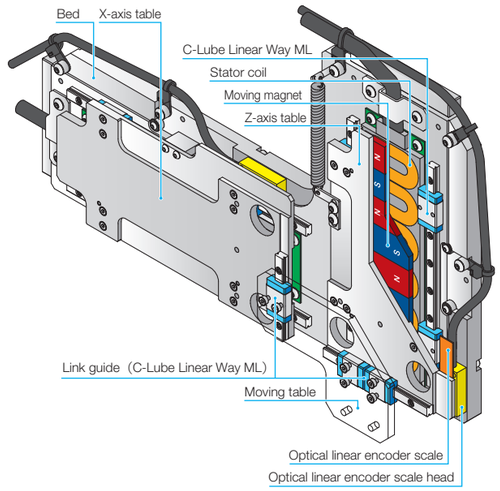
3 ● Operation monitoring function

The track can be verified from PC by using the driver monitoring function.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

NT···XZH [High thrust pick and place unit]

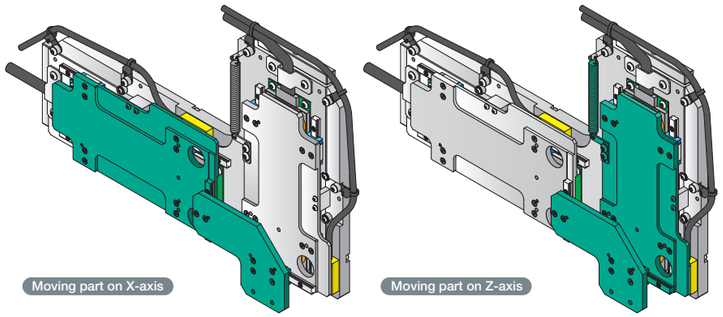
NT···XZH is a linear motor drive high thrust pick and place unit with compact integral X- and Z- axis, using C-Lube Linear Way ML for miniature linear motion rolling guide in the table guiding parts. Thanks to adoption of a system to drive moving table by using a link mechanism, it realizes both higher thrust force of the linear motor and weight reduction of the moving parts and reduces tact time. By entering a positioning program, you may set flexible operation patterns and change strokes according to works easily.

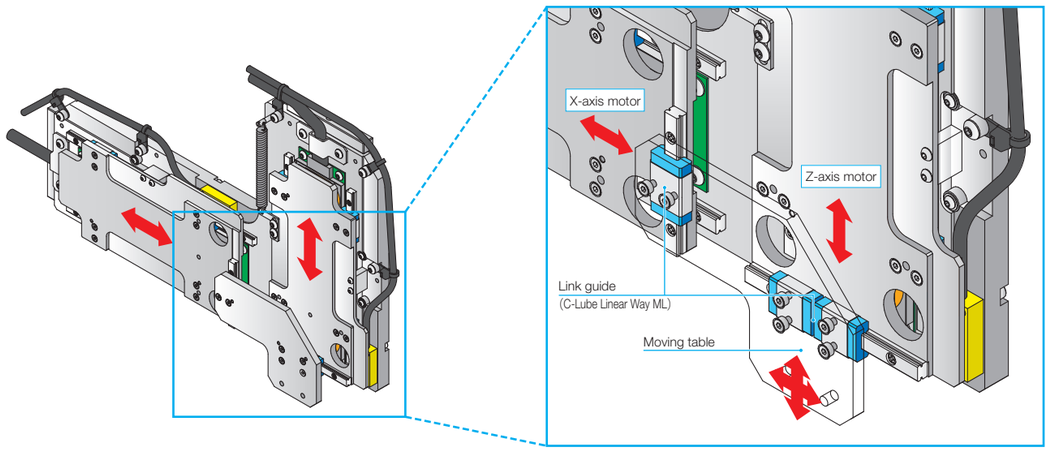


Points

1 ● High thrust and high tact

Thanks to X- and Z-axis motor located on the flat surface and adoption of a system to drive moving table by using a link mechanism, it realizes both higher thrust force of the linear motor and weight reduction of the moving parts and significantly reduces tact time.





2 ● High resolution and high responsiveness

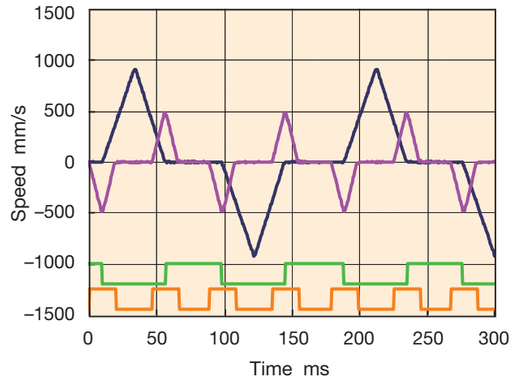
Performing fully-closed loop control by incorporating an optical linear encoder in both axes enables high resolution and high response.

Measuring condition

NT90XZH2510/5	
Effective thrust force	: X-axis; 14.8 N, Z-axis; 15.7 N
Carrying mass	: 150 g
Stroke	: X-axis; 22 mm, Z-axis; 5 mm
Acceleration / deceleration time	: X-axis; 24 ms, Z-axis; 9 ms

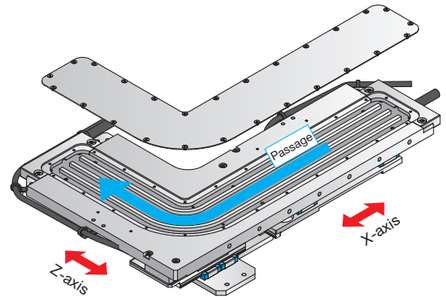
Enables high-speed positioning!

Settling time: 2 ms, Number of cycles: 334 times/min

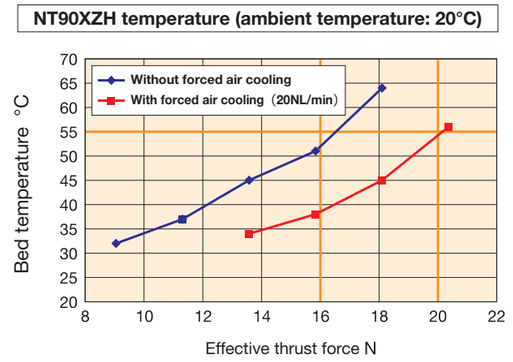


3 ● Air cooling

With the structure that heat-generating coils are converged at the stator, cooling and heat discharge to the mounting base are easy. When the air cooling option is specified, tact time can be shortened further.

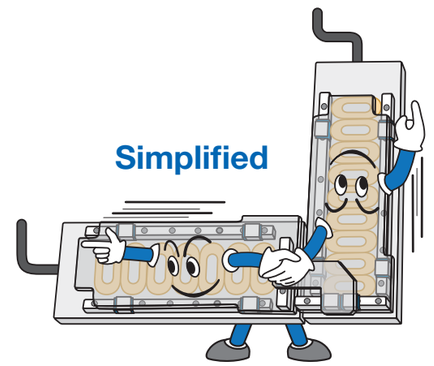


NT90XZH temperature (ambient temperature: 20°C)



4 ● Cableless moving parts

Though it is multi-axial unit, wiring is easy and higher cleanliness is realized by adopting cableless moving magnet system for the moving parts.



5 ● Operation monitoring function

As with NT···XZ, the track can be verified from PC by using the driver monitoring function.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Identification Number

Example of identification number of NT···V

1	2	1	3		4	5	6	7	8
NT	55	V	25	/	5		L	SC	1

1 Model — Page Ⅱ-239
2 Size — Page Ⅱ-239
3 Stroke length — Page Ⅱ-239
4 Resolution of linear encoder — Page Ⅱ-239
5 Cover — Page Ⅱ-239
6 Cord direction — Page Ⅱ-239
7 Designation of sensor — Page Ⅱ-239
8 Specification number — Page Ⅱ-239

Identification Number and Specification

1 Model
NT···V: Nano Linear NT···V

2 Size
38: Width 38mm
55: Width 55mm
80: Width 80mm

3 Stroke length
10: 10mm (applicable to NT38V)
18: 18mm (applicable to NT38V)
25: 25mm (applicable to NT55V and NT80V)
65: 65mm (applicable to NT55V and NT80V)
120: 120mm (applicable to NT80V)

4 Resolution of linear encoder
1 : 0.1μm
1F: 0.1μm High speed specification (applicable to NT55V and NT80V) When 1F is selected, a system configuration using dedicated driver ADVA is necessary.
5 : 0.5μm

5 Cover
No symbol: Without cover
D: With cover (applicable to NT38V)

6 Cord direction
L : Leftward
R: Rightward
Select from the cord direction indicated in Fig. 1. (direction for pulling out a cord when placing an encoder on the lower side)

7 Designation of sensor
No symbol: Without sensor
SC : With sensor (limit and pre-origin) and sensor bracket
Applicable to NT55V and NT80V
two types of dedicated drivers, ADVA and MR-J3-10B ready for SSCNETⅢ, are available for Nano Linear NT55V and NT80V. If MR-J3-10B is used, SC must be selected.

8 Specification number
1: Specification number 1
The specification number is limited to 1.

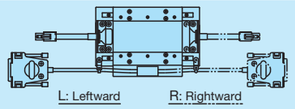


Fig. 1 NT···V cord direction

Identification Number

Example of identification number of NT···H

1	2	1	3		4	5
NT	88	H	65	/	05	R

1 Model — Page Ⅱ-240
2 Size — Page Ⅱ-240
3 Stroke length — Page Ⅱ-240
4 Resolution of linear encoder — Page Ⅱ-240
5 Cord direction — Page Ⅱ-240

Identification Number and Specification

1 Model
NT···H: Nano Linear NT···H

2 Size
88: Width 88mm

3 Stroke length
25: 25mm
65: 65mm

4 Resolution of linear encoder
01: 0.01μm
05: 0.05μm

5 Cord direction
L : Leftward
R: Rightward
Select from the direction indicated in Fig. 2. (direction for pulling out a cord when placing an encoder on the lower side)

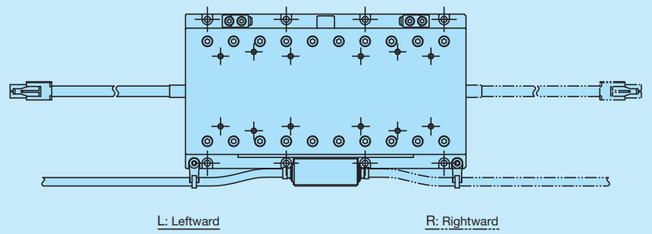
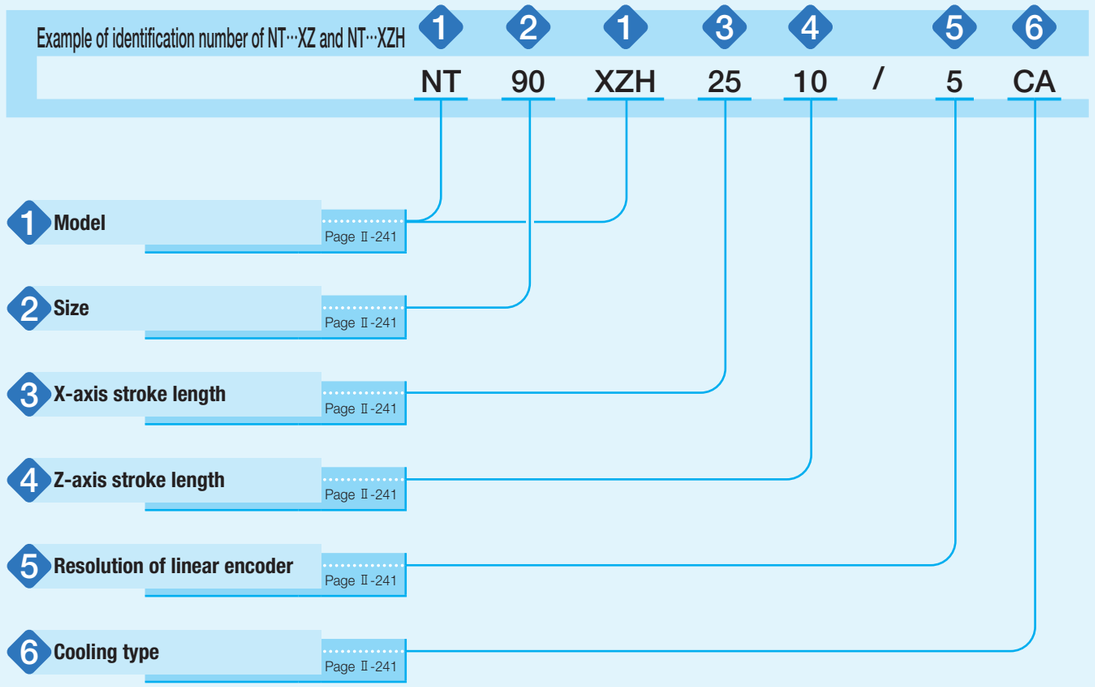


Fig. 2 NT88H cord direction

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Identification Number



Identification Number and Specification

1 Model

NT···XZ : Nano Linear NT···XZ
NT···XZH: Nano Linear NT···XZH, high thrust type

2 Size

80: Z-axis width of 80mm (applicable to NT···XZ)
90: Z-axis width of 90mm (applicable to NT···XZH)

3 X-axis stroke length

25: 25mm (applicable to NT···XZH)
45: 45mm (applicable to NT···XZ)

4 Z-axis stroke length

10: 10mm

5 Resolution of linear encoder

1 : 0.1μm
1F: 0.1μm High speed specification
5 : 0.5μm

6 Cooling type

No symbol: Natural air cooling
CA : Air cooling (applicable to NT···XZH)

Specifications

Table 1 Specification / Performance of NT38V

Item \ Model and size		NT38V10		NT38V18	
Maximum thrust(1)	N	3			
Rated thrust(2)	N	0.6		0.8	
Maximum load mass	kg	0.5			
Effective stroke length	mm	10		18	
Resolution	μm	0.1	0.5	0.1	0.5
Maximum speed	mm/s	270	500	270	500
Positioning repeatability(3)	μm	±0.5			
Mass of moving table	kg	0.036 (with cover 0.040)		0.048 (with cover 0.052)	
Total mass(4)	kg	0.190 (with cover 0.198)		0.230 (with cover 0.239)	
Ambient temperature and humidity in operation		0~40℃ · 20~80%RH (keep dewdrop free)			

Notes (1) The duration of maximum thrust is up to 1 second.
(2) This is based on the case of mounting on a metal mating member material at an ambient temperature of 20℃.
(3) When the temperature of the product is constant.
(4) Mass of the cord is not included.

Table 2 Specification / Performance of NT55V

Item \ Model and size		NT55V25			NT55V65		
Maximum thrust(1)	N	25					
Rated thrust(2)	N	7					
Maximum load mass	kg	5					
Effective stroke length	mm	25			65		
Resolution	μm	0.1		0.5	0.1		0.5
Maximum speed	mm/s	270	1 000	1 300	270	1 000	1 300
Positioning repeatability(3)	μm	±0.5					
Mass of moving table	kg	0.17			0.17		
Total mass(4)	kg	0.42			0.5		
Ambient temperature and humidity in operation		0~40℃ · 20~80%RH (keep dewdrop free)					

Notes (1) The duration of maximum thrust is up to 1 second.
(2) This is based on the case of mounting on a metal mating member material at an ambient temperature of 20℃.
(3) When the temperature of the product is constant.
(4) Mass of the cord is not included.

Table 3 Specification / Performance of NT80V

Item \ Model and size		NT80V25			NT80V65			NT80V120		
Maximum thrust(1)	N	36								
Rated thrust(2)	N	8								
Maximum load mass	kg	5								
Effective stroke length	mm	25			65			120		
Resolution	μm	0.1		0.5	0.1		0.5	0.1		0.5
Maximum speed	mm/s	270	1 000	1 300	270	1 000	1 300	270	1 000	1 300
Positioning repeatability(3)	μm	±0.5								
Mass of moving table	kg	0.28			0.28			0.47		
Total mass(4)	kg	0.68			0.83			1.4		
Ambient temperature and humidity in operation		0~40℃ · 20~80%RH (keep dewdrop free)								

Notes (1) The duration of maximum thrust is up to 1 second.
(2) This is based on the case of mounting on a metal mating member material at an ambient temperature of 20℃.
(3) When the temperature of the product is constant.
(4) Mass of the cord is not included.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Specifications

Table 4 Specification / Performance of NT···H

Item \ Model and size		NT88H25		NT88H65	
Maximum thrust(1)	N	25			
Rated thrust(2)	N	5			
Maximum load mass	kg	5			
Effective stroke length	mm	25		65	
Resolution	μm	0.01	0.05	0.01	0.05
Maximum speed	mm/s	90	400	90	400
Positioning accuracy (3)	μm	1			
Positioning repeatability(4)	μm	±0.1			
Parallelism in motion A	μm	5			
Attitude accuracy(5)	Sec	5			
Straightness in vertical and straightness in horizontal	μm	1			
Mass of moving table	kg	0.7		0.9	
Total mass(6)	kg	1.6		2	
Ambient temperature and humidity in operation		0~40℃ · 20~80%RH (keep dewdrop free)			

Notes (1) The duration of maximum thrust is up to 1 second.
(2) This is based on the case of mounting on a metal mating member material at an ambient temperature of 20℃.
(3) The value is for the temperature of ambient and product being 20℃.
(4) When the temperature of the product is constant.
(5) This represents accuracy in pitching and yawing.
(6) Mass of the cord is not included.

Table 5 Specification / Performance of NT···XZ and NT···XZH

Item \ Model and size		NT80XZ4510				NT90XZH2510			
		X-axis		Z-axis		X-axis		Z-axis	
Maximum thrust(1)	N	50		25		70			
Rated thrust(2)	N	10		2.5		Natural air cooling: 16		Air cooling(3) : 20	
Maximum load mass	kg	0.1				0.2			
Effective stroke length	mm	45		10		25		10	
Resolution	μm	0.1	0.5	0.1	0.5	0.1	0.5	0.1	0.5
Maximum speed	mm/s	270	1 000 1 300	270	800 800	270	1 000 1 300	270	1 000 1 000
Positioning repeatability(4)	μm	±0.5				±0.5			
Mass of moving table	kg	0.6(5)		0.12		0.38		0.35	
Total mass(6)	kg	1.6				2.8			
Ambient temperature and humidity in operation		0~40℃·20~80%RH (keep dewdrop free)							

Notes (1) The duration of maximum thrust is up to 1 second.
(2) This is based on the case of mounting on a metal mating member material at an ambient temperature of 20℃.
(3) This is under air flow of 20NL/min.
(4) When the temperature of the product is constant.
(5) Mass of moving table of Z-axis is included.
(6) Mass of the cord is not included.

■ Thrust characteristics of NT···V

NT38V

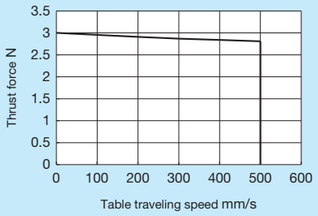


Fig. 3 Thrust characteristic of NT38V

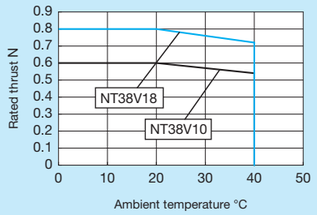


Fig. 4 Rated thrust characteristic of NT38V

Remark: This is a case when mounting on a metal mating member material.

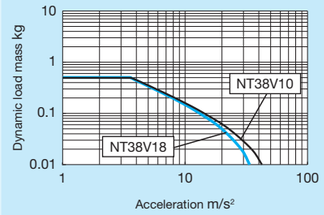


Fig. 5 Dynamic load mass of NT38V

Remark: This is a value calculated based on the thrust force with table moving speed set to 500mm/s.

NT55V

● Use with driver ADVA-01NL or MR-J3

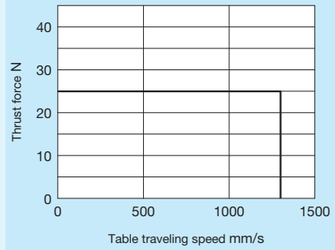


Fig. 6 Thrust characteristic of NT55V

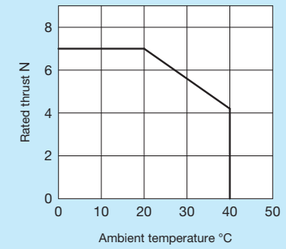


Fig. 7 Rated thrust characteristic of NT55V

Remark: This is a case when mounting on a metal mating member material.

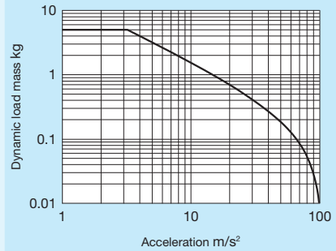


Fig. 8 Dynamic load mass of NT55V

Remark: This is a value calculated based on the thrust force with table moving speed set to 500mm/s.

● Use with driver ADVA-R5ML

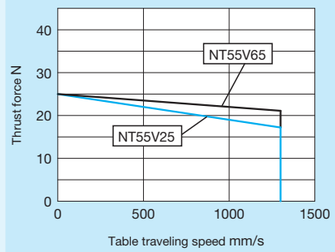


Fig. 9 Thrust characteristic of NT55V

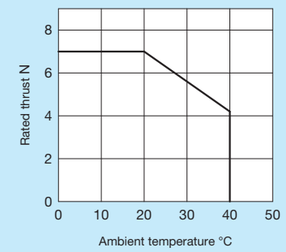


Fig. 10 Rated thrust characteristic of NT55V

Remark: This is a case when mounting on a metal mating member material.

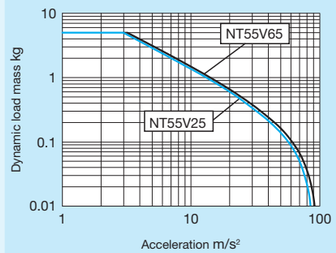


Fig. 11 Dynamic load mass of NT55V

Remark: This is a value calculated based on the thrust force with table moving speed set to 500mm/s.

NT80V

● Use with driver ADVA-01NL or MR-J3

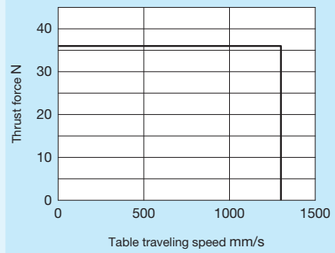


Fig. 12 Thrust characteristic of NT80V

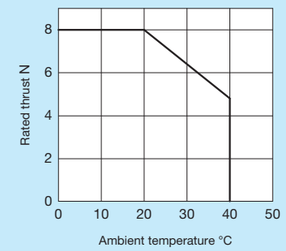


Fig. 13 Rated thrust characteristic of NT80V

Remark: This is a case when mounting on a metal mating member material.

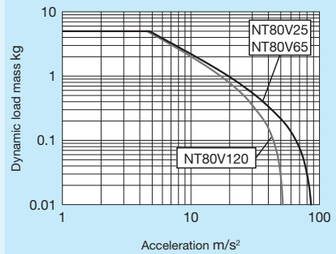


Fig. 14 Dynamic load mass of NT80V

Remark: This is a value calculated based on the thrust force with table moving speed set to 500mm/s.

● Use with driver ADVA-R5ML

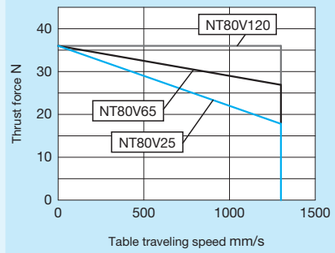


Fig. 15 Thrust characteristic of NT80V

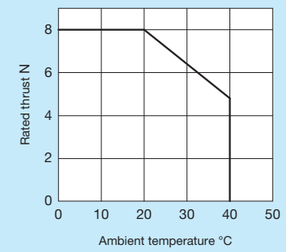


Fig. 16 Rated thrust characteristic of NT80V

Remark: This is a case when mounting on a metal mating member material.

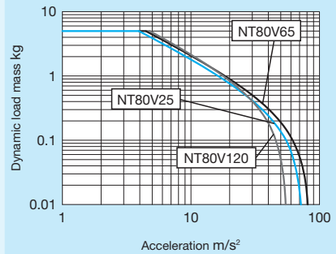


Fig. 17 Dynamic load mass of NT80V

Remark: This is a value calculated based on the thrust force with table moving speed set to 500mm/s.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

■ Thrust characteristics of NT···H

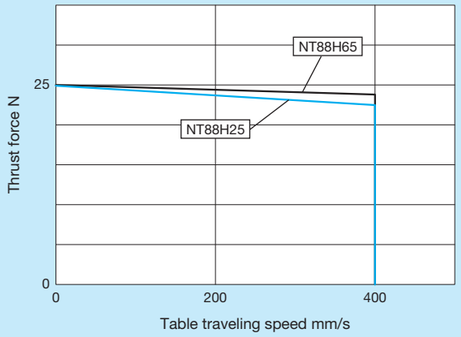


Fig. 18 Thrust characteristic of NT88H

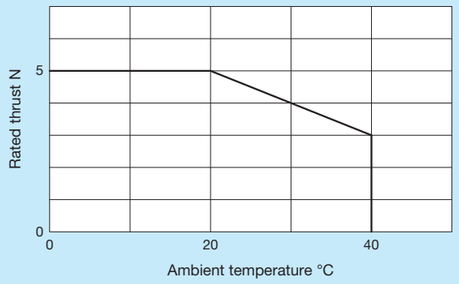


Fig. 19 Rated thrust characteristic of NT88H

Remark: This is a case when mounting on a metal mating member material.

■ Thrust characteristics of NT···XZ and NT···XZH

● Use with driver ADVA-01NL

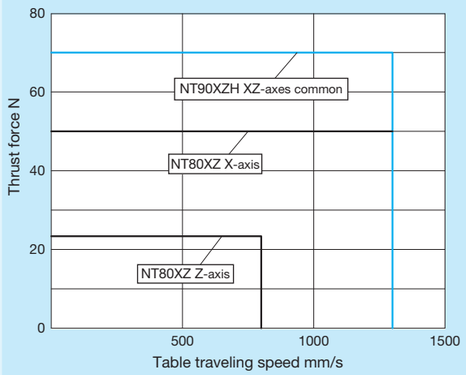


Fig. 20 Thrust characteristics of NT···XZ and NT···XZH

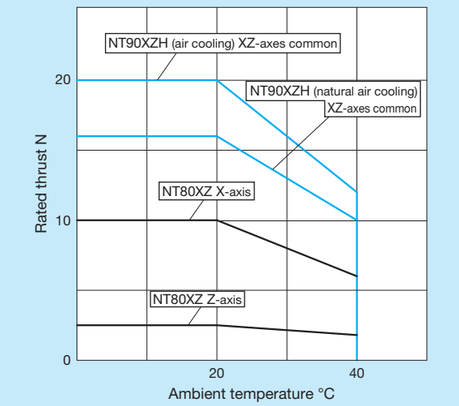


Fig. 21 Rated thrust characteristics of NT···XZ and NT···XZH

Remark: This is a case when mounting on a metal mating member material.

● Use with driver ADVA-R5ML

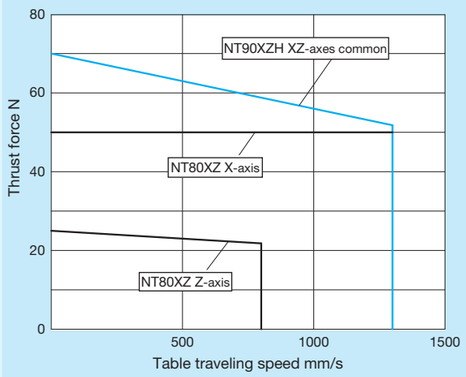


Fig. 22 Thrust characteristics of NT···XZ and NT···XZH

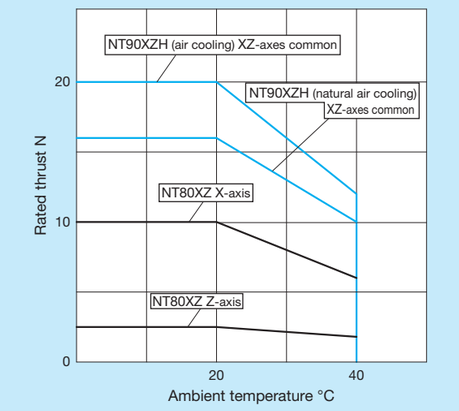
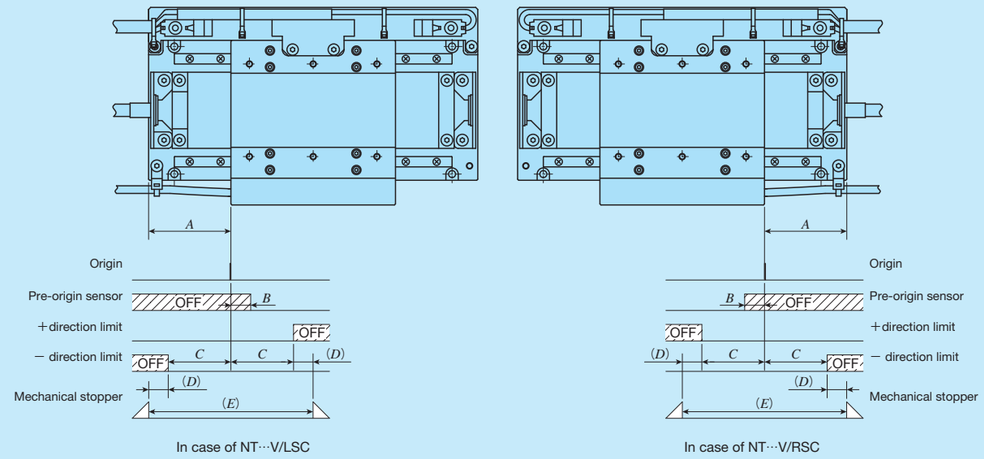


Fig. 23 Rated thrust characteristics of NT···XZ and NT···XZH

Remark: This is a case when mounting on a metal mating member material.

Sensor Specification

Table 6 Sensor timing chart for NT55V/SC and NT80V/SC



unit: mm

Model and size	*A*	*B*(1)	*C*(1)	*D*(1)	*E*(1)
NT55V 25/SC	20	4	12.5	3	31
NT55V 65/SC	40	4	32.5	3	71
NT80V 25/SC	20	4	12.5	3	31
NT80V 65/SC	40	4	32.5	3	71
NT80V120/SC	70	4	60	5.5	131

Note (1) Respective values are for reference and are not guaranteed values.
For detailed dimensions, please contact **IKO**.

Remark: For the specifications of respective sensors, please see the section of sensor specification in General Explanation.

● NT···V, NT···XZ and NT···XZH do not have a built-in sensor

Return to origin operation in a system configuration using driver ADVA and the system configuration for NT38V is conducted by external input. In the return to origin operation, the moving table turns around after contacting the mechanical stopper, and then stops at the origin position. Since, however, a limit sensor and a pre-origin sensor can be mounted on NT55V and NT80V with a supplemental signal (/SC), the return to origin operation using each sensor is also possible.
Forward / backward direction limit detection in a system configuration using the driver ADVA is performed by driver's software limit function. The stroke range can be set by parameters for driver. In addition, the software limit function is only enabled in position control mode and return to origin must be completed. In case of speed control mode and thrust force control mode, mount an external sensor.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

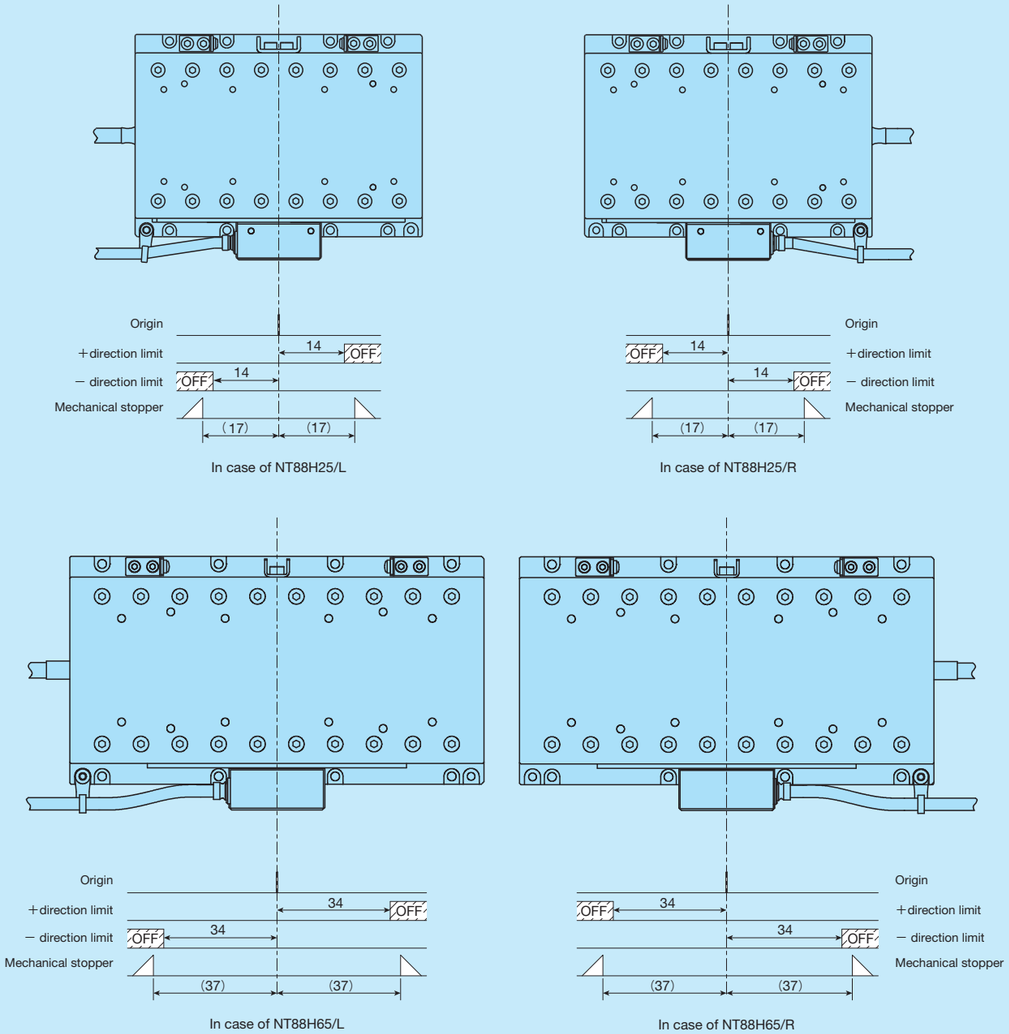


Fig. 24 Sensor timing chart for NT···H

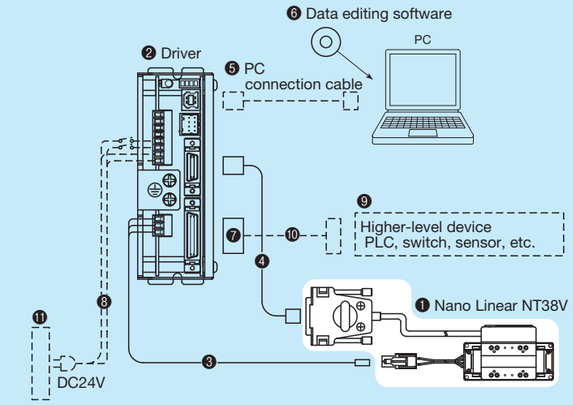
Remarks 1. For return to origin operation in a standard system configuration, use the return to origin function (limit inversion method) of the driver. It is necessary to input the limit signal output from the encoder interface to the driver.
2. Pre-origin sensor is not provided.
3. For the specifications of respective sensors, please see the section of sensor specification in General Explanation.

System Configuration

■ System configuration for NT38V

There are dedicated driver for Nano Linear NT38V, and the system configuration is shown in Table 7. For the driver specification, please see the section of driver specification on Page Ⅱ-253. When you place an order, please specify desired identification numbers from the list of Table 7.

Table 7 System configuration for NT38V



No.	Name	Identification number
❶	Nano Linear NT···V	NT38V
❷	Driver	NCR-DCE0D3B-021D-S135
❸	Motor extension cord (3m(1))	TAE20T8-AM03
❹	Encoder extension cord (1.5m(1))	TAE20U8-EC
❺	PC connection cable	This must be prepared by customer USB cable A plug - Mini B plug
❻	Data editing software	NCR-XCR000-S135
❼	Connectors for input & output signal	TAE20U9-CN(2)
❽	Power cord	This must be prepared by customer.
❾	Higher-level device	
❿	Higher-level device connection cord	
⓫	DC24V power supply	

Notes (1) For specific cord length, please contact IKO.
(2) Connectors for input & output signal TAE20U9-CN is a combined product of 10136-3000PE (connector) and 10336-52A0-008 (cover) from Sumitomo 3M Limited.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

■ System configuration for NT55V, NT80V, NT···XZ and NT···XZH

Two series of dedicated drivers, ADVA and MR-J3, are available for Nano Linear NT55V, NT80V, NT···XZ and NT···XZH, and the system configuration varies depending on the driver used. For ADVA, two types of specification, pulse train specification and high speed network EtherCAT specification, are available. For MR-J3, only high speed network SSCNETⅢ specification is available. Table 8 shows the correspondence between drivers and tables. Table 9 shows the example of identification number for ADVA, and Table 10 shows the tables and model number of applicable MR-J3. For the driver specification, please see the section of driver specification on Page II-254～II-256.
Please also note that the drivers compatible with MECHATROLINK will be prepared based on respective usages. If needed, please contact IKO.

Table 8 Nano Linear NT···V, NT···XZ, NT···XZH and model numbers of applicable drivers

Driver type	Applicable Nano Linear model
ADVA	NT55V、NT80V、NT···XZ、NT···XZH
MR-J3	NT55V、NT80V

Remark: MR-J3 is only applicable to sensor-included specification / SC.

Table 9 Model number for ADVA

ADVA – 01NL EC / NT55V25
① Model ② ③ ④

② Current and voltage	
01NL	Single-phase / Three-phase 200 V
R5ML	Single-phase 100 V

③ Command type	
No symbol	Pulse train command
EC	EtherCAT

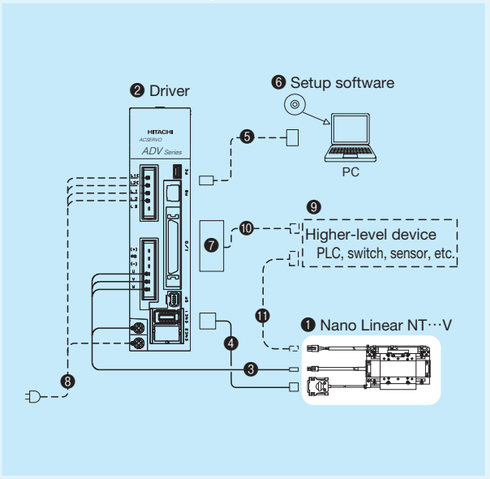
④ Applicable Nano Linear model	
NT55V 25	NT55V 25
NT55V 65	NT55V 65
NT80V 25	NT80V 25
NT80V 65	NT80V 65
NT80V120	NT80V120
NT80XZ-X	NT80XZ X-axis
NT80XZ-Z	NT80XZ Z-axis
NT90XZH	For both NT90XZH X-axis and Z-axis

Table 10 Nano Linear NT···V and model number of applicable MR-J3

Model number of table	Model number of driver
NT55V 25	MR-J3-10B-MB004U713
NT55V 65	MR-J3-10B-MB004U714
NT80V 25	MR-J3-10B-MB004U715
NT80V 65	MR-J3-10B-MB004U716
NT80V120	MR-J3-10B-MB004U717

Remark: MR-J3-10B is only applicable to sensor-included specification / SC.

Table 11 System configuration for NT···V with driver ADVA



No.	Name	Model and size
❸	Motor extension cord (3m) (1)	TAE20V3-AM03
❹	Encoder extension cord (2m) (1)	TAE20V4-EC02
❺	PC connection cable（3m）	USB mini B cable This must be prepared by customer.
❻	Setup software	ProDriveNext Please download from the official website of Hitachi Industrial Equipment Systems Co., Ltd.
❼	I/O connector	TAE20R5-CN (2)
❽	Power cord	This must be prepared by customer.
❾	Higher-level device	
❿	I/O connector connection cable	
⓫	Sensor relay cord	

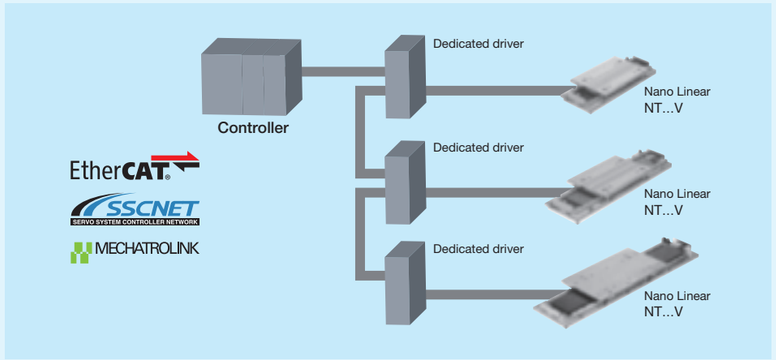
Notes (1) For specific cord length, please contact IKO.
(2) I/O connector TAE20R5-CN is a combined product of 10150-3000PE (connector) and 10350-52F0-008 (cover) from Sumitomo 3M Limited.

● Setup software

To operate Nano Linear NT55V, NT80V, NT···XZ and NT···XZH, initial setting of driver parameters is required. Parameter setting for driver is performed using the setup software. It can also be used for gain adjustment and operational status check. In the driver, the setup software and PC connection cable are not provided. These can be shared in plural drivers but at least 1 set is required. Please prepare these on your own or place an order separately according to your requirement.

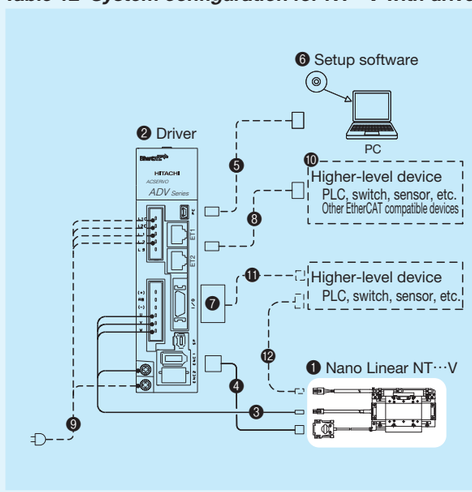
● Motion network is supported

Drivers compatible with motion network EtherCAT, SSCNETⅢ, and MECHATROLINK are also available.
Motion network realizes higher performance and higher accuracy of devices free from pulse frequency constraint in pulse train command, noise effects in analog command (voltage command), voltage drop due to cable length and effects of temperature drifting. Reduction of wiring can also be achieved, so synchronization system with more than one table can easily be established.



Model	Features
EtherCAT	This is an Ethernet-based open network communication system developed by Beckhoff of Germany, allowing the real time control. High speed communication and high accuracy inter-node synchronization realize the higher performance and higher accuracy of devices. In addition, Ethernet cables available on the market can be used and various wiring types can be supported.
SSCNET Ⅲ	This is a motion network communication system for servo system control developed by Mitsubishi Electric Corporation. It applies the optical fiber cables, so noise immunity is improved relative to conventional SSCNET.
MECHATROLINK	The open field network communication that connects the controller and various components. Developed by Yasukawa Electric Corporation and managed by MECHATROLINK Members Association.

Table 12 System configuration for NT···V with driver ADVA···EC

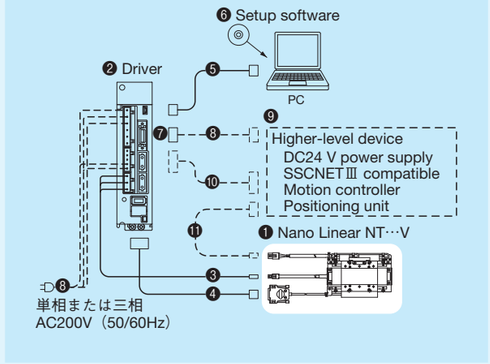


No.	Name	Model and size
❸	Motor extension cord (3m) (1)	TAE20V3-AM03
❹	Encoder extension cord (2m) (1)	TAE20V4-EC02
❺	PC connection cable（3m）	USB mini B cable This must be prepared by customer.
❻	Setup software	ProDriveNext Please download from the official website of Hitachi Industrial Equipment Systems Co., Ltd.
❼	I/O connector	TAE20V5-CN (2)
❽	Ethernet cable	This must be prepared by customer.
❾	Power cord	
❿	Higher-level device	
⓫	I/O connector connection cable	
⓬	Sensor relay cord	

Notes (1) For specific cord length, please contact IKO.
(2) I/O connector TAE20V5-CN is a combined product of 10120-3000PE (connector) and 10320-52F0-008 (cover) from Sumitomo 3M Limited.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

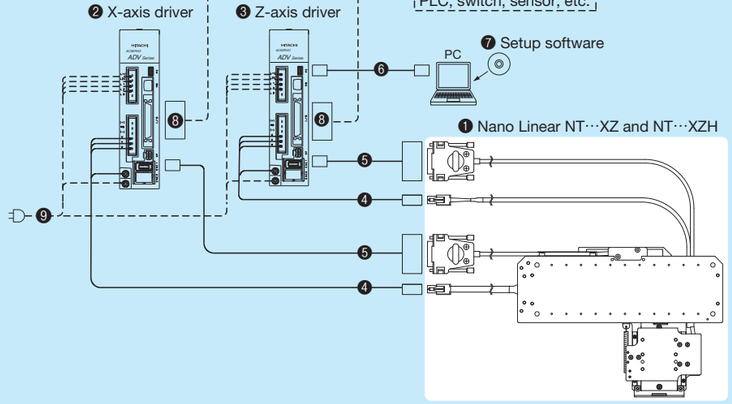
Table 13 System configuration for NT···V with driver MR-J3-10B (SSCNETⅢ compatible)



No.	Name	Model and size
❸	Motor extension cord (3m) (1)	TAE20U4-AM
❹	Encoder extension cord (2m) (1)	TAE20U5-EC
❺	PC connection cable (3m)	MR-J3USBCBL3M
❻	Setup software	MRZJW3-SETUP221
❼	Connectors for input & output connection	MR-CCN1 (2)
❽	Power cord	This must be prepared by customer.
❾	Higher-level device (3)	
❿	Connection cable for SSCNETⅢ	
⓫	Sensor relay cord	

Notes (1) For specific cord length, please contact IKO.
(2) Connectors for input & output connection MR-CCN1 is a combined product of 10120-3000VE (connector) and 10320-52F0-008 (cover) from Sumitomo 3M Limited.
(3) The higher-level devices are a motion controller, positioning unit and DC24V power supply ready for SSCNETⅢ from Mitsubishi Electric Corporation.

Table 14 System configuration for NT···XZ and NT···XZH



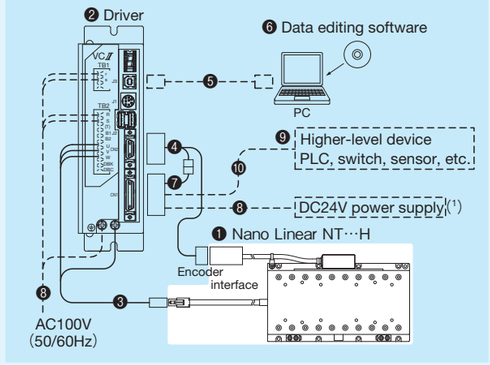
No.	Name	数量	Model and size	
❶	Nano Linear NT···XZ and NT···XZH	1	NT80XZ4510	NT90XZH2510
❷	Driver for X-axis	1	ADVA-01NL/NT80XZ-X	ADVA-01NL/NT90XZH
❸	Driver for Z-axis	1	ADVA-01NL/NT80XZ-Z	ADVA-01NL/NT90XZH
❹	Motor extension cord（3m）(1)	2	TAE20V3-AM03	
❺	Encoder extension cord（2m）(1)	2	TAE20V4-EC02	
❻	PC connection cable（2m）	1	USB mini B cable (This must be prepared by customer.)	
❼	Setup software	1	ProDriveNext Please download from the official website of Hitachi Industrial Equipment Systems Co., Ltd.	
❽	I/O connector	2	TAE20R5-CN (2)	
❾	Power cord	—	This must be prepared by customer.	
❿	Higher-level device	—		
⓫	I/O connector connection cable	—		

Notes (1) For specific cord length, please contact IKO.
(2) I/O connector TAE20R5-CN is a combined product of 10150-3000PE (connector) and 10350-52F0-008 (cover) from Sumitomo 3M Limited.

■ System configuration of NT···H

There are dedicated driver for Nano Linear NT···H, and the system configuration is shown in Table 15. For the driver specification, please see the section of driver specification on Page Ⅱ-258. When you place an order, please specify desired model numbers from the list of Table 15.

Table 15 System configuration of NT···H



No.	Name	Model number
❶	Nano Linear NT···H	NT88H
❷	Driver	NCR-DDA0A1A-051D-T08
❸	Motor extension cord (3m) (2)	TAE20T8-AM03
❹	Encoder extension cord (2m) (2)	TAE20T9-EC02
❺	PC connection cable	This must be prepared by customer. USB cable A plug - B plug
❻	Data editing software	NCR-XCR000-S135
❼	Connector set	TAE20U0-CN (3)
❽	Power cord	This must be prepared by customer.
❾	Higher-level device	
❿	I/O connector connection cable	

Notes (1) DC24V power supply must be prepared separately by customer.
(2) For specific cord length, please contact IKO.
(3) The connector set TAE20U0-CN is a set of I/O connector and connector for sensor (crimp wired (200mm)).
The I/O connector is a combined product of 10136-3000PE (connector) and 10336-52F0-008 (cover) from Sumitomo 3M Limited.
The connector for sensor is a combined product of 170365-1 (contact) and 172157-1 (housing) from Tyco Electronics Japan G.K..

● Data editing software

To operate Nano Linear NT···H, initial setting of driver parameters is required. Parameter setting for driver is performed using the data edition software.
In the driver, the data edition software and PC cable are not provided. These can be shared in plural drivers but at least 1 set is required. Please place an order separately according to your requirement.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Driver Specification

■ Specification of driver NCR for NT38V

- Low-voltage (DC24V) specification and compact design of 115×100×33.8 mm. It contributes to miniaturization of devices and space saving.
- Settling time is reduced by setting two types of parameters, inertia and viscous friction, and performing feed forward torque control.
- The PC editing software has 4ch real-time oscillometer function, remote operation function and resonance frequency measurement function, etc. as well as parameter edit functions, allowing for easy machine diagnosis and startup / adjustment of the linear motor.

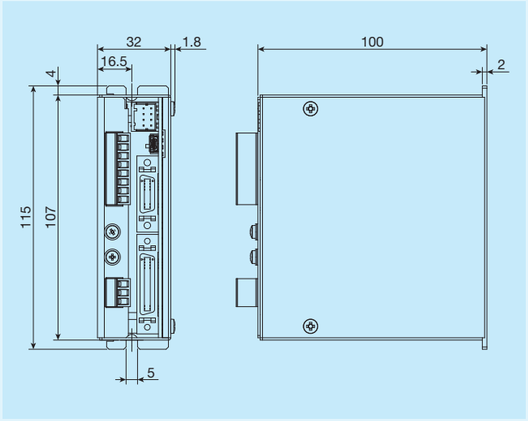


Table 16 Driver specification

Item			Model number: NCR-DCE0D3B-021D-S135
Electric specifications	Input power	Type	Main power supply and control circuit power supply separating type
		Voltage specification	Continuous: DC24 V ±5% (min.22.8 V~max.25.2 V)
			Instant: DC26.1 V~DC28 V (out of torque compensation range)
		Current specification	DC8.0 A (at rated output)
	Continuous output current		6.5A (rms)
	Maximum output current		13.0A (rms)
	Carrier frequency		10kHz
	Input & output signal		8 input points and 4 output points (DC12~24 V; photo coupler insulated)
	Communication		USB 2.0 (full speed) : 1ch, RS-422A serial communication: 1ch
Functional specifications	Main function		Speed control / pulse train operation, torque limitation, self-diagnosis and forward / backward switching
	Operation mode	Pulse train operation	External pulse train command
			Switching of directional pulse / directional + shift pulse / Pulse with 90-degree difference
			Line driver: 4 MHz (16 MHz at 4-time multiplication)
			Phase sequence switching, electronic gear (pulse train command ratio) , and command averaging function
			Internal pulse train command
			Inching, 7 positioning points, return to origin, 2 acceleration / deceleration points, S acceleration / deceleration (command averaging function used)
		Speed control operation	Analog command voltage gain switching, 7 internal speed command points
			Acceleration / deceleration time: 0~9.999 sec
	Torque limitation		2 parameter setting points (forward / backward separately)
	Servo performance improvement function		Speed gain switching: 3 points (normal, low speed and GSEL switching) , torque command filter Feed forward (speed, inertia and viscous friction) and 5 notch filter points
	Control input signal (8 points)		Startup, servo on, torque limitation, speed gain selection, reset, mode selection, command selection, command pulse input prohibition, command direction inversion, emergency stop, internal pulse startup, origin LS, origin marker standard configuration overtravel, reverse configuration overtravel, current position data output request forward inching, backward inching, alarm code output request and command data reflection prohibition
	Control output signal (4 points)		Ready, alarm, deviation range A and B, brake release, speed zero, marker output, in emergency stop, return to origin complete
	Monitoring function		Confirmation of status by 4-point status indicator LEDs PWR (green), RDY (green), RUN (green), ALM (red) The following monitor can be used in the optional dedicated editing software Various status indications, alarm indication, status indication by oscillometer function, etc.
	Protective function		Encoder failure, magnetic pole detection failure, overspeed, overload, under voltage,overvoltage, overcurrent failure, deviation error, DSP error and overheat protection
Environment	Ambient temperature		0~55℃, Storage: -20~60℃
	Ambient humidity		90%RH or lower (keep dewdrop free) , Storage: 85%RH or lower (keep dewdrop free)
	Vibration resistance		0.5 G (10~50 Hz) However, keep resonance free
	Shock resistance		5G
Mass			0.41kg

■ Specification of ADVA, a driver for NT55V, NT80V, NT···XZ and NT···XZH

- In addition to the conventional pulse train command input, high speed motion network EtherCAT is also supported.
- 10 input terminals, 6 output terminals, and analog input (0~±10 V) can be controlled by intelligent terminals.
- The high controllability shortens the settling time, realizing further improvement of productivity.
- Machine diagnosis, startup and adjustment of linear motor can be easily performed thanks to parameter settings, monitor display, operation trace and automatic tuning function of the setup software.

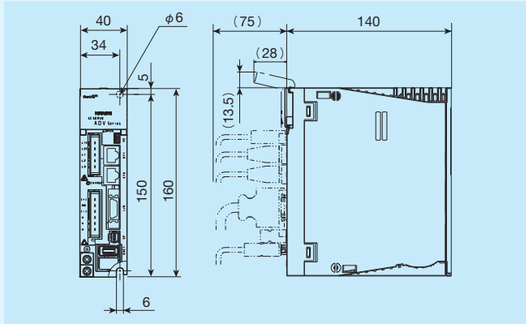


Table 17.1 Driver specification (pulse train command specification)

Item		Model number: ADVA-R5ML	ADVA-01NL
Basic specification	Maximum rated current	1.2Arms	
	Max. momentary current	3.6Arms	
	Power plant capacity	0.3kVA	
	Input power (main circuit)	Single-phase 100~115V +10/−15% 50/60Hz ±5%	Single-phase / Three-phase 200~230V +10/−15% 50/60Hz ±5%
	Input power (control circuit)		Single-phase 200~230V +10/−15% 50/60Hz ±5%
	Protective structure(1)	Open type IP00	
	Control method	Line-line sinusoidal pulse width modulation (PWM) method	
	Control mode	Position control / Speed control / Thrust force control	
	Supported linear scale	A, B and Z signals (line driver output: AM26C31 or AM26LS31 equivalent) Recommended encoder: LIE5 series (manufactured by JENA)	
	Linear scale maximum frequency	20 Mpps (after 4-time multiplication) [5 Mpps (original signal)]	
Input & output relation function	Speed command / Limit input	Analog input: 0~±10 V / Maximum speed (gain configurable)	
	Thrust force command / Limit input	Analog input: 0~±10 V / Maximum thrust (gain configurable)	
	Position command input	Line driver signal: 20 Mpps or lower (after 4-time multiplication, non-isolated input) 2 Mpps (after 4-time multiplication, insulated input) ① Two phase pulse with difference ② Forward / backward direction pulse input ③ Command pulse + sign input Select from ①~③ Electronic gear function is available	
	Contact input signal	Intelligent terminal selects 10 input terminal function by parameter (DC12 / 24 V Contact signal / Open collector signal input with internal DC24 V power supply) ① Servo ON / ② Alarm reset / ③ Control mode switching / ④ Thrust force limitation / ⑤ Forward direction driving prohibited / ⑦ Multi-speed 1~3 / ⑧ Speed proportional control / ⑨ Speed zero clamp / ⑩ Origin limit switch / ⑪ Return to origin / ⑫ Pulse train input permission / ⑬ Deviation counter clear / ⑭ Forward direction signal ⑮ Backward direction signal / ⑯ Gain switching / ⑰ Integration clamp / ⑱ Electronic gear switching 1, 2 / ⑲ External trip (temperature sensor (Temp. signal)) / ⑳ Thrust force bias / in emergency stop	
	Contact output signal	Intelligent terminal selects 6 output terminal function by parameter (open collector signal output: sink output) ① Servo preparation completed / ② Alarm / ③ Positioning completed / ④ Speed reached / ⑤ Zero speed detection / ⑥ Brake release / ⑦ Servo ON answer / ⑧ Thrust force limited / ⑨ Overload notice / ⑩ Magnetic pole position estimation completed / ⑪ Speed limited / ⑫ Return to origin complete / ⑬ DB status / ⑭ FOT signal monitor / ⑮ ROT signal monitor / ⑯ Driving prohibited / ⑰ Pulse train input permission answer / ⑱ In emergency stop	
	Signal monitor output	A and B phase signal output: Line driver signal output, (output dividing ratio configurable) Z phase signal output: Line driver / open collector signal output	
	Monitor output	2ch, 0~±5 V, to be selected by parameter from the following functions Speed detection value / thrust force command value / speed detection value / speed deviation / position deviation / current value / command pulse frequency / regenerative brake usage ratio / electronic thermal integrated value / main circuit voltage (PN voltage) / analog input value (AI 1~4) / output thrust force limitation / forward thrust force limitation / backward thrust force limitation	
Internal functions	Built-in operator	Five digit numeric display, five key push button / DIP switch (Modbus communication setting)	
	External operator	Windows XP / Vista (32 bit) PC can be connected (USB 2.0 full speed)	
	Regenerative braking circuit	Built-in (but no braking resistance)	
	Dynamic brake(2)	Built-in (motion condition configurable)	
	Protective function	Overcurrent, overload, braking resistor overload, main circuit overvoltage, memory error, main circuit under voltage, CT failure, CPU error 1, external trip (motor temperature error) , servo ON ground detection, control circuit under voltage, servo amplifier temperature error, drive prohibition error, power module failure, safety circuit failure, emergency shutdown, encoder failure, mismatch error, power reactivation request, magnetic pole position estimation error, magnetic pole position estimation not executed, position deviation error, speed deviation error, overspeed error, momentary power failure, main circuit power supply failure, drive range error	
Operating environment	Ambient temperature / Storage temperature(3)	0~55℃/−10~70℃	
	Ambient humidity	20~90%RH (keep dewdrop free)	
	Vibration resistance(4)	5.9m/s² (0.6G) 10~55Hz	
	Service space	Altitude of 1000 m or below, indoor (no corrosive gas and dust)	
Mass		0.7kg	

Notes (1) The protection system is compliant with JEM1030.
(2) Use the dynamic brake for emergency stop.
(3) The storage temperature is the temperature during transportation.
(4) Compliant with IS C60068-2-6:2010.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Driver specification

Table 17.2 Driver specification (EtherCAT specification)

Item		Model number ADVA-R5MLEC	Model number ADVA-01NLEC
Basic specification	Maximum rated current	1.2Arms	
	Max. momentary current	3.6Arms	
	Power plant capacity	0.3kVA	
	Input power (main circuit)	Single-phase 100～115V +10/−15% 50/60Hz ±5%	Single-phase / Three-phase 200～230V +10/−15% 50/60Hz ±5%
	Input power (control circuit)		Single-phase 200～230V +10/−15% 50/60Hz ±5%
	Control method	Line-line sinusoidal pulse width modulation (PWM) method	
	Control mode	Position control / Speed control / Thrust force control	
Input & output relation function	Analog thrust force limitation	Analog input: 0～±10 V / Maximum speed (gain configurable)	
	Contact input signal	Intelligent terminal selects 6 input terminal function by parameter (DC12 / 24 V Contact signal / Open collector signal input with internal DC24 V power supply) ① Thrust force limitation / ② Forward direction driving prohibited / ③ Backward direction driving prohibited / ④ Speed proportional control / ⑤ Speed zero clamp / ⑥ Origin limit switch / ⑦ Deviation counter clear / ⑧ Gain switching / ⑨ Integration clamp / ⑩ Encoder clear / ⑪ External trip (temperature sensor (Temp. signal)) / ⑫ Probe 1 ⑬ Probe 2 ⑭ Emergency stop	
	Contact output signal	Intelligent terminal selects 4 output terminal function by parameter (open collector signal output: sink output) ① Servo preparation completed / ② Alarm / ③ Positioning completed / ④ Speed reached / ⑤ Zero speed detection / ⑥ Brake release / ⑦ Servo ON answer / ⑧ Thrust force limited / ⑨ Overload notice / ⑩ Alarm code 1～7 / ⑪ Magnetic pole position estimation completed / ⑫ Near signal output / ⑬ Speed limited / ⑭ Return to origin complete / ⑮ DB status / ⑯ FOT signal monitor / ⑰ ROT signal monitor / ⑱ Driving prohibited / ⑲ In emergency stop	
	Monitor output	2ch, 0～±5 V, to be selected by parameter from the following functions Speed detection value / thrust force command value / Speed command value / speed deviation / position deviation / current value / regenerative brake usage ratio / electronic thermal integrated value / main circuit voltage (PN voltage) / analog input value (AI 3～4) / output thrust force limitation / forward thrust force limitation / backward thrust force limitation	
Internal functions	Built-in operator	2-digit numeric display, DIP switch (node address setting for EtherCAT)	
	External operator	Windows XP / Vista (32 bit) PC can be connected (USB 2.0 full speed)	
	Regenerative braking circuit	Built-in	
	Dynamic brake(1)	Built-in (motion condition configurable)	
	Protective function	Overcurrent, overload, braking resistor overload, main circuit overvoltage, memory error, main circuit under voltage, CT failure, CPU error 1, external trip (motor temperature error), servo ON ground detection, momentary power failure, control circuit under voltage, servo amplifier temperature error, main circuit power supply failure, drive prohibition error, power module failure, safety circuit failure, emergency shutdown, encoder failure, mismatch error, power reactivation request, network communication error, DC synchronization error, magnetic pole position estimation error, magnetic pole position estimation not executed, position deviation error, speed deviation error, overspeed error, drive range error, under voltage display	
Operating environment	Ambient temperature / Storage temperature(2)	0～55℃/−10～70℃	
	Ambient humidity	20～90%RH (keep dewdrop free)	
	Vibration resistance(3)	5.9m/s² (0.6G) 10～55Hz	
	Service space	Altitude of 1000 m or below, indoor (no corrosive gas and dust)	
Mass		0.7kg	

Notes (1) Use the dynamic brake for emergency stop.
(2) The storage temperature is the temperature during transportation.
(3) Compliant with IS C60068-2-6:2010.

● Setup software

- Used for setting, referencing, changing, printing and saving driver parameters.
- Allows for real-time monitoring of operational status and output status.
- Indicates speed and current, etc. on charts.
- Supports commissioning and gain tuning.

Table 18 Operating environment of the setup software

Item	Conditions
PC	DOS/V PC CPU: Pentium4 1.8 G or higher HDD free space: 1 GB or more Display resolution: 1024×768 or higher recommended
OS	Windows Vista Windows XP SP2

Remark: Windows® is a registered trademark of Microsoft Corporation in USA and other countries.

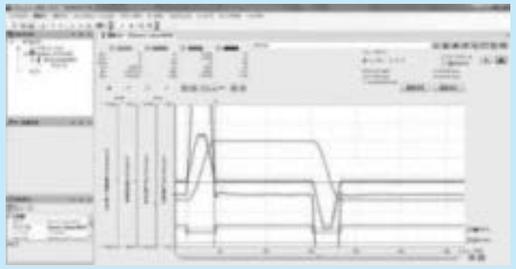


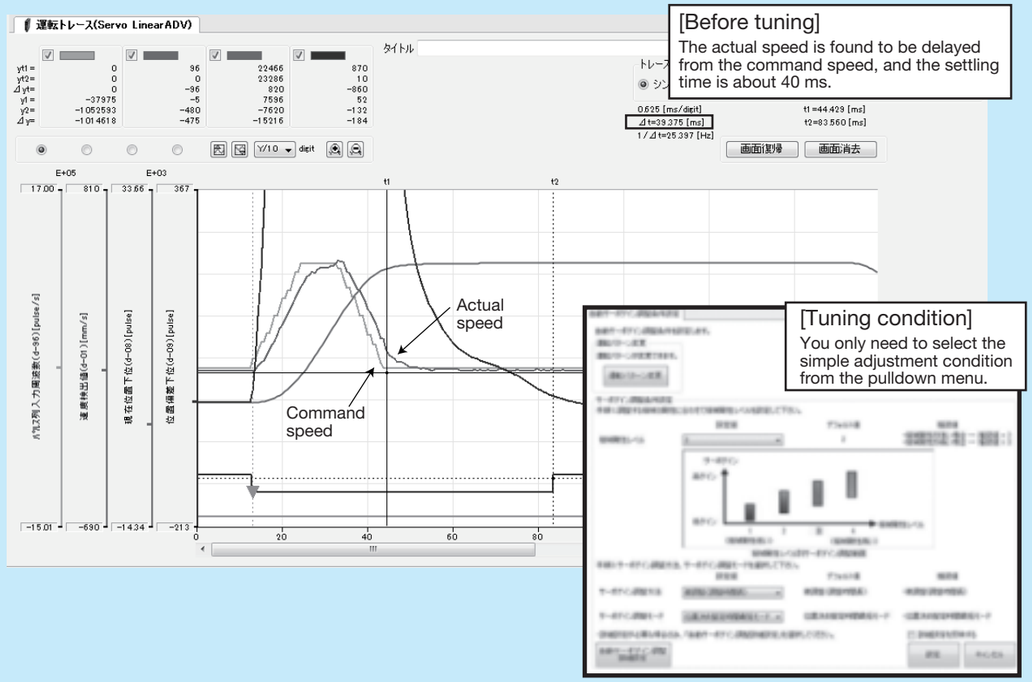
Figure 25 Operation and trace function

● Automatic tuning function

By using the automatic tuning function of the setup software for ADVA, non-expert users can easily perform high-accuracy gain adjustment.

〈Conditions〉

Main body: NT55V25/05R+ADVA-01NL/NT55V25
Carrying mass: 200g Speed: 500mm/s Positioning complete width: ±5μm Traveling distance: 10mm
Acceleration / deceleration time: 12ms



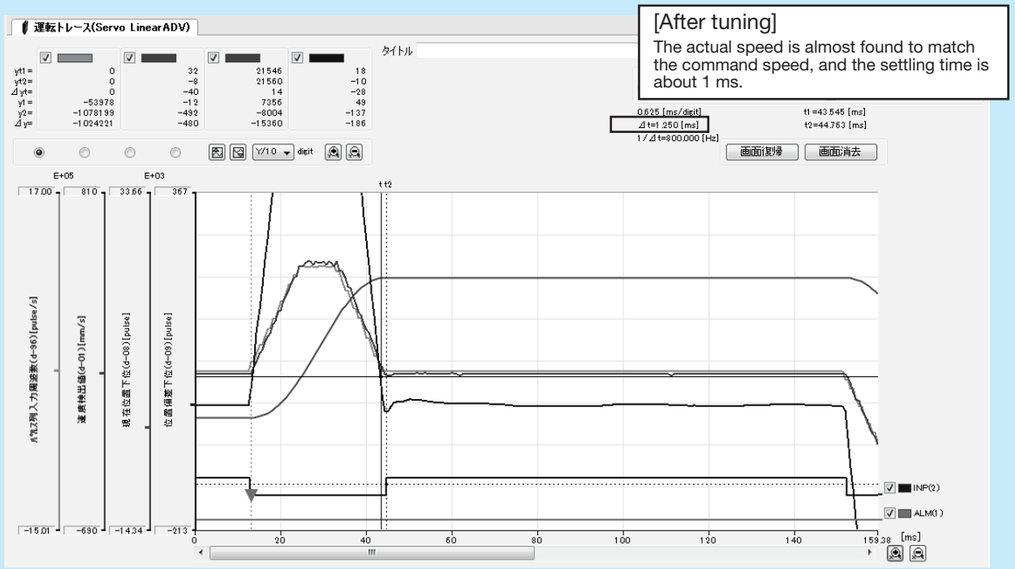


Figure 26 Automatic tuning

NT

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

■ Specification of MR-J3, a driver for NT55V and NT80V

●Compatible with SSCNETⅢ (high-speed serial bus). Higher speed and accuracy are realized by optical communication system.
●Higher machine performance is realized by adjustment functions such as advanced vibration control, adaptive filterⅡ and robust disturbance compensation function.
●Machine diagnosis, startup and adjustment of linear motor can be easily performed thanks to parameter settings, monitor display and machine analyzer of the setup software (MR Configurator).

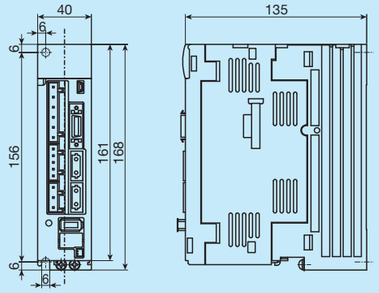


Table 19 Driver specification

Item \ Model number		MR-J3-10B-MB004U□□□
Main circuit power supply	Voltage / Frequency	Single-phase / Three-phase AC200～230V 50/60Hz
	Allowable power fluctuation	Single-phase / Three-phase AC170～253V
	Allowable frequency fluctuation	Within ±5%
Control circuit power supply	Voltage / Frequency	Single-phase AC200～230V 50/60Hz
	Allowable power fluctuation	Single-phase AC170～253V
	Allowable frequency fluctuation	Within ±5%
	Input	30W
Power supply for interface		DC24V±10% (required current capacity: 150mA)
Control method		Sine wave PWM control · current control method
Dynamic brake		Built-in
Protective function		Overcurrent interrupt, regeneration overvoltage interrupt, overloading interrupt (electric thermal), servomotor overheat protection, detector error protection, regeneration error protection, undervoltage, momentary power failure protection, overspeed protection, excessive error protection
Structure		Natural air cooling and opening (IP00)
Environment	Ambient temperature	0～55℃ (keep freeze free), Storage: -20～65℃ (keep freeze free)
	Ambient humidity	90%RH or lower (keep dewdrop free), Storage: 90%RH or lower (keep dewdrop free)
	Atmosphere	Indoor (no exposure to direct sun light), must be free from corrosive gas, flammable gas, oil mist and dust
	Altitude	1 000m or lower
	Vibration	5.9m/s^2 or less
Mass		0.8kg

■ Specification of NCR, a driver for NT···H

●The driver and positioning unit are integrated, and the system is miniaturized with its wiring streamlined.
●Higher reliability and usability such as driftless, elimination of adjustment fluctuation, improvement of man-machine interface have been pursued with digital control.
●Easy positioning operation and pulse train operation are supported by mode selection, for applications to wide range of usages.
●Torque control and speed control are available.
●Control suitable for machine rigidity is made possible by full-scale software servo functions such as linear / S-curve acceleration and deceleration, feed forward, torque command filter, gain switching at shutdown and low speed, disturbance compensation control, etc.
●Peripheral devices such as touch panel, higher-level controller, etc. can be connected via serial communication.
●Dedicated editing software can be connected via USB 2.0 (full speed).

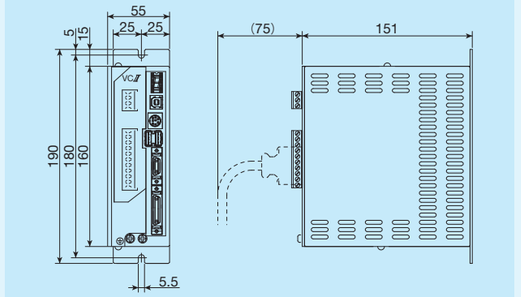


Table 20 Driver specification

Item \ Model number			NCR-DDA0A1A-051D-T08
Basic specification	Maximum rated current		1.1Arms
	Max. momentary current		3.3Arms
	Power plant capacity		0.15kVA
	Input power (main circuit and control circuit)		Single-phase AC100～115V (allowable power fluctuation AC90～121V) 50/60Hz±5%
	Control method		Three-phase sine wave PWM method
	Control mode		Position (position control data / pulse train)
Input/Output function	Command input	Pulse train command	Line driver system is supported The maximum input frequency is indicated below ① Pulse with 90-degree difference: 4Mpps (16Mpps after 4-time multiplication) ② Directional pulse: 4Mpps ③ Directional + shift pulse: 4 Mpps
		Speed control operation	Analog speed command and internal speed command (3 points)
		Torque control operation	Analog torque command and internal torque command (3 points)
		Easy positioning operation	3 positioning modes: Manual mode / Return to origin mode / Easy positioning mode
	Contact input signal		[8 basic input signal points (initial value)] Servo on, reset, command pulse input prohibition, mode selection 1, mode selection 2, startup, speed selection, torque selection <Following signals are used by assigning remote control or input signals> Emergency stop, proportional control, address specification, speed override, deviation clear, torque limitation, standard configuration overtravel, reverse configuration overtravel, etc.
	Contact output signal		[4 basic output signal points (initial value)] Servo ready, alarm, warning, positioning complete <Following signals are used by assigning remote control or output signals> Torque limited, speed zero, in speed operation mode, in torque operation mode, in easy positioning mode, in pulse train operation mode, encoder marker, etc.
	Encoder feedback pulse output		Pulse train output with 90-degree difference (Frequency dividing output allowed. The maximum output frequency of 2 signals of A / B phase is 20Mpps after 4-time multiplication)
	Encoder feedback pulse input		Pulse train input of with 90-degree difference (The maximum input frequency of 2 signals of A / B phase is 20Mpps after 4-time multiplication)
	Monitor output		① Analog monitor: 2 points (2 points selected by parameters from various motion status can be monitored.) ② Various types of monitoring is possible with USB-ready dedicated editing software.
Internal functions	Protective function		IPM failure, overvoltage, undervoltage, overspeed, overload, regeneration resistance overload, deviation overflow, communication failure, data error, CPU failure, encoder failure, automatic magnetic pole detection failure, absolute encoder failure, etc.
	Communication function		Various data can be transmitted / received via serial communication (RS-422A). Dedicated editing software can be connected via USB 2.0 (full speed)
Operating environment	Ambient temperature in operation / Storage temperature		0～55℃ / -20～66℃
	Operating humidity		85%RH or lower (keep dewdrop free)
	Vibration resistance		0.5G 10～55Hz
	Service space		Altitude of 1 000m or below, indoor (no corrosive gas and dust)
Mass			1.0kg

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

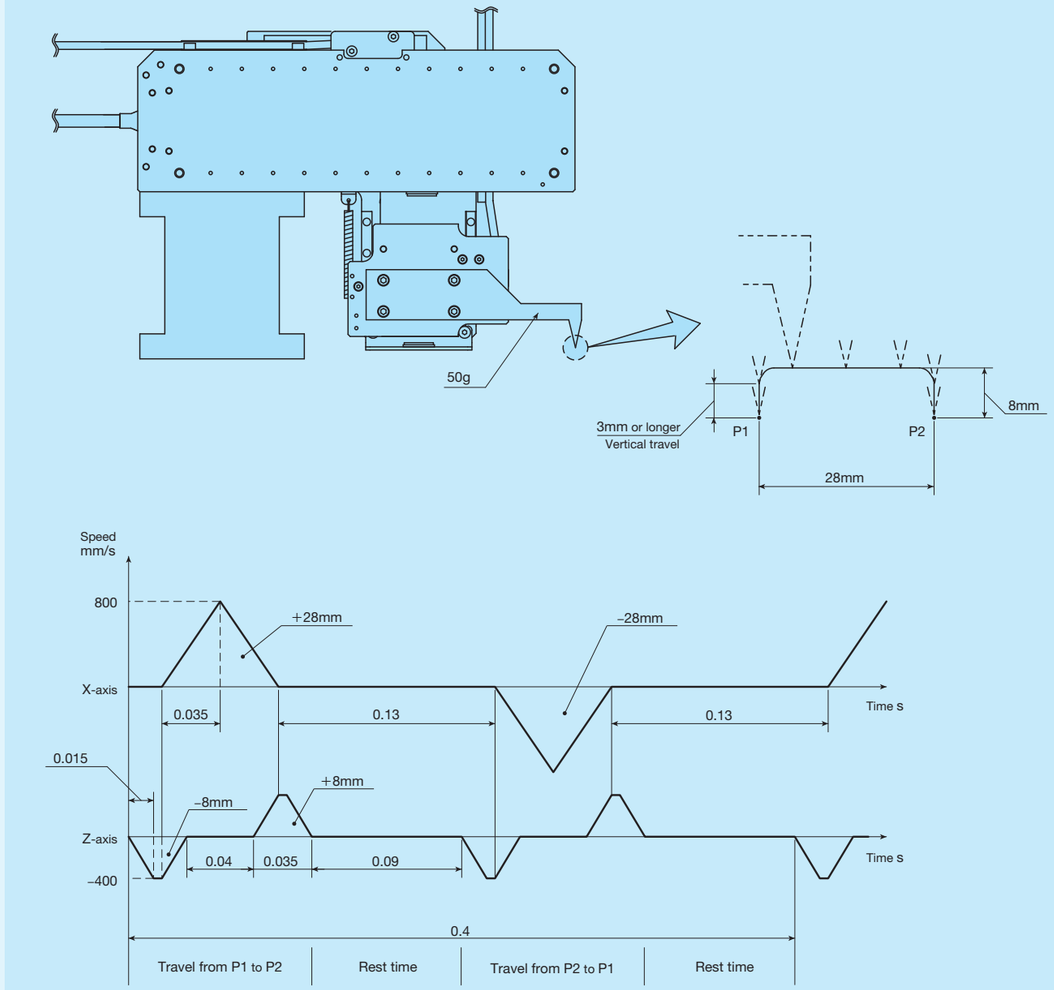
Example Operation Pattern

■ Example operation pattern of NT···XZ pick and place

Described below is a representative example of operation pattern of pick and place.

Table 21 Operational conditions

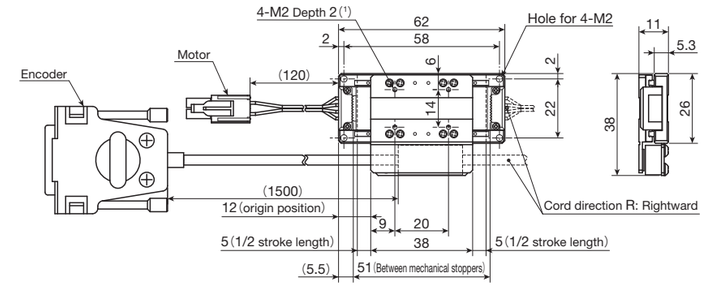
Item		Operational conditions
Carrying mass	g	50
X-axis travel distance	mm	28
Z-axis travel distance	mm	8
Rest time in P1 and P2	s	0.09
1 cycle time	s	0.4
X-axis effective thrust force	N	8.9
Z-axis effective thrust force	N	2.5



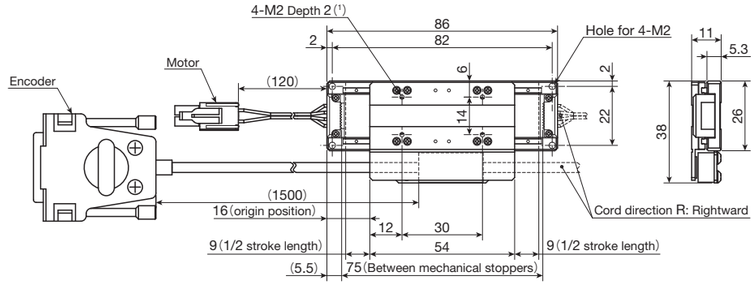
Remark: The speed pattern diagram shows a program pattern, not actual motions.

IKO Nano Linear NT

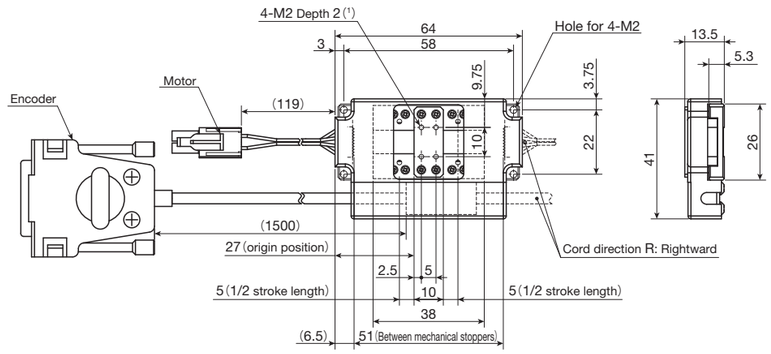
NT38V10



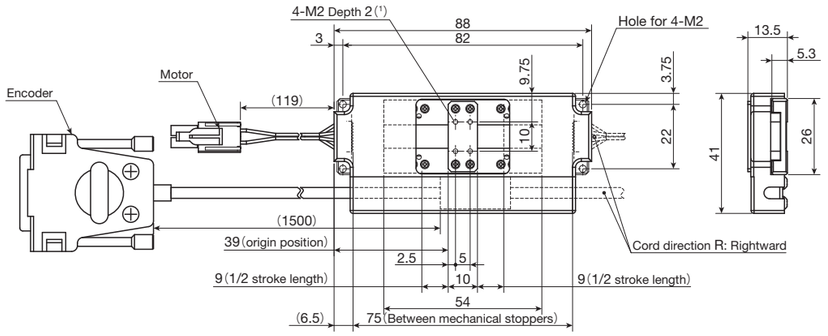
NT38V18



NT38V10/D



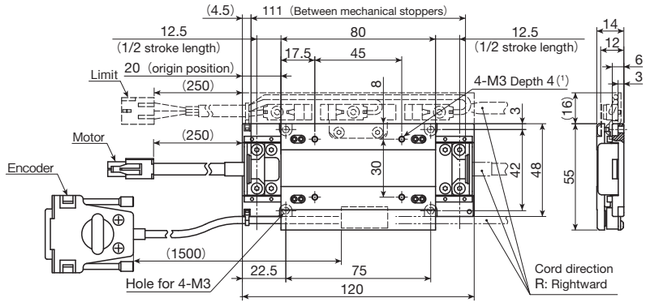
NT38V18/D



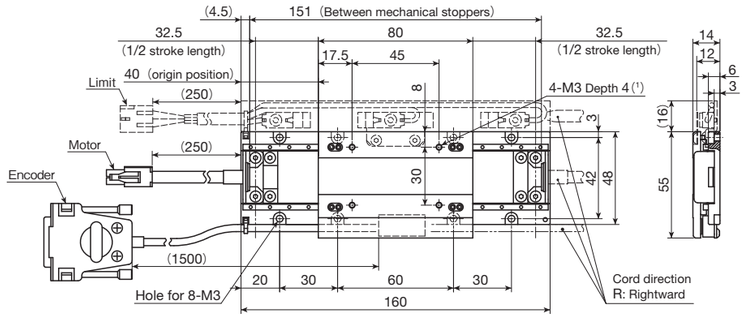
Note (1) Too deep insertion depth of the mounting bolt may affect the running performance of the moving table, so never insert a bolt longer than the depth of the through hole.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

NT55V25



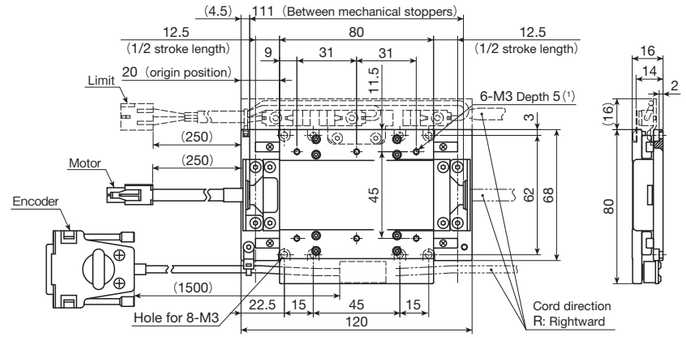
NT55V65



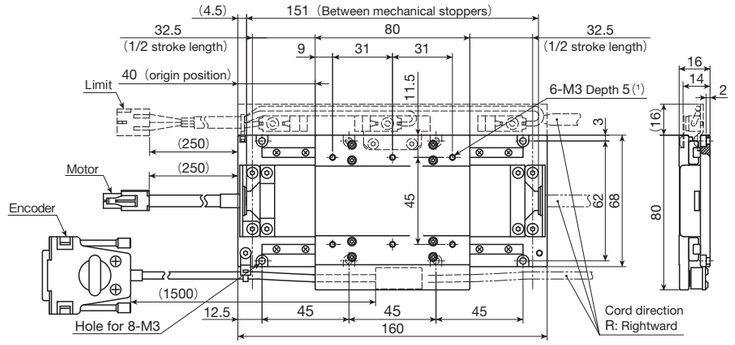
Note (1) Too deep insertion depth of the mounting bolt may affect the running performance of the moving table, so never insert a bolt longer than the depth of the through hole.

Remark: Dashed line portions in the dimensional figures indicate the sensor-included specification / SC.

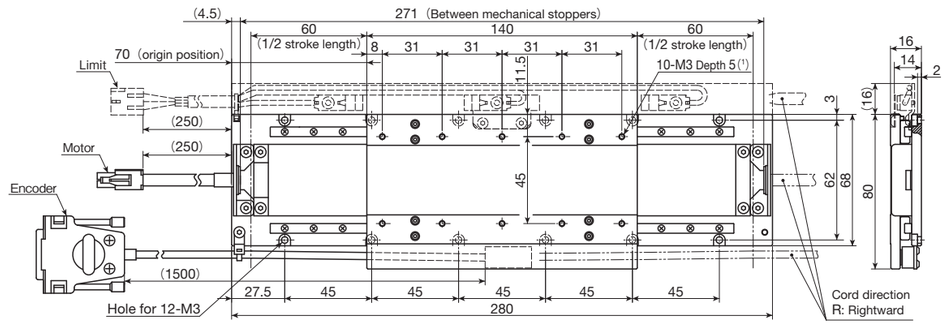
NT80V25



NT80V65



NT80V120



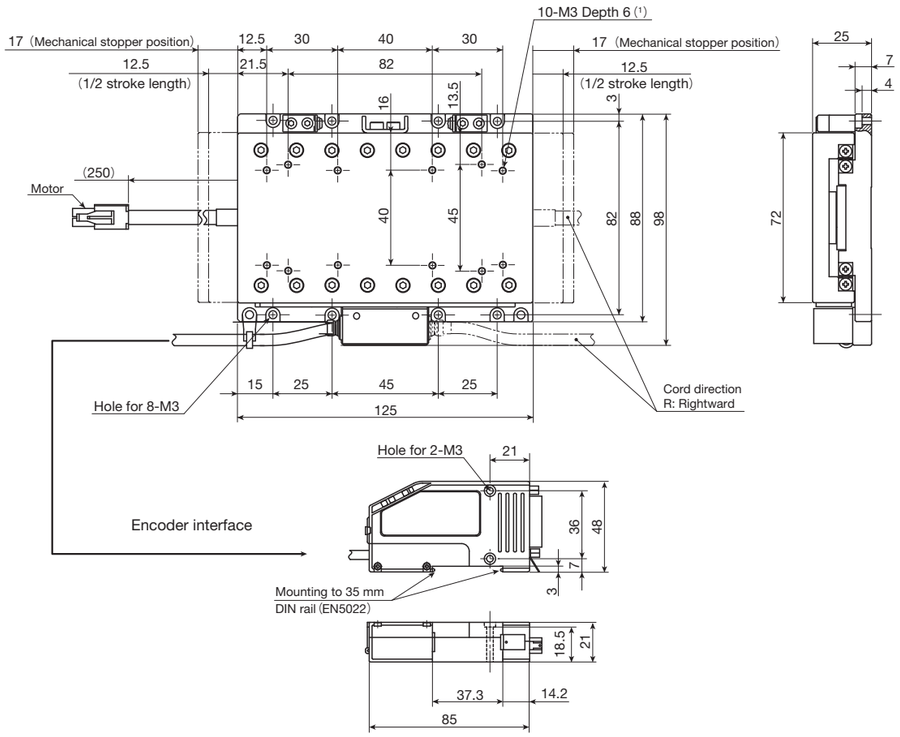
Note (1) Too deep insertion depth of the mounting bolt may affect the running performance of the moving table, so never insert a bolt longer than the depth of the through hole.

Remarks 1. Dashed line portions in the dimensional figures indicate the sensor-included specification / SC.

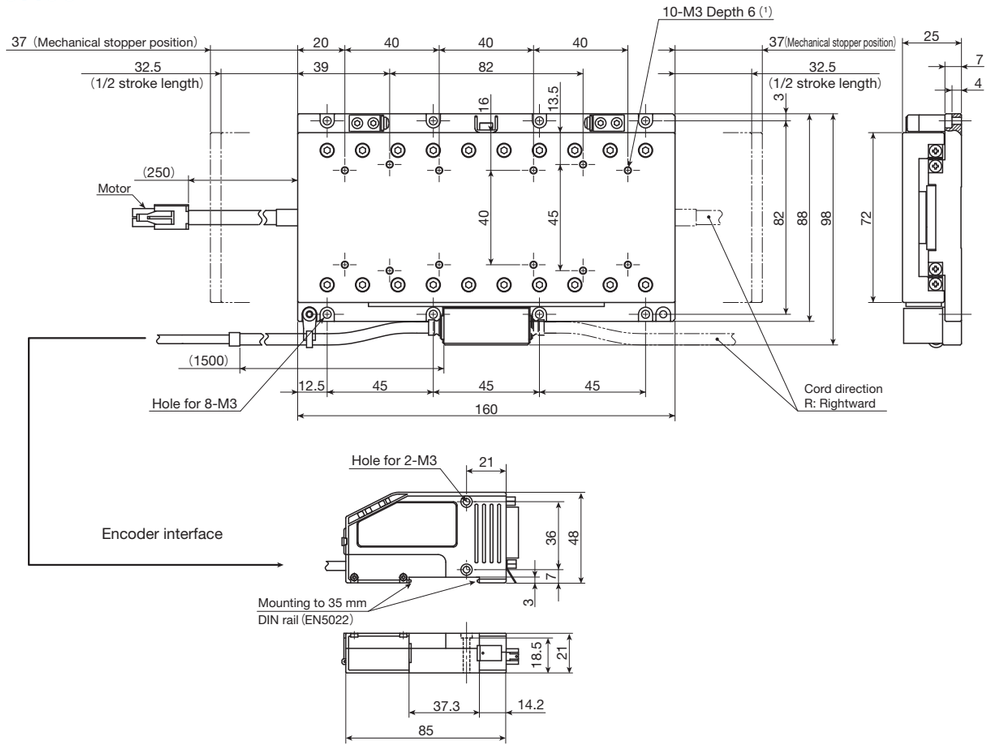
2. XY two-axis specification table combined with NT80V with NT80V25 used as an upper axis is assembled in IKO before shipping.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

NT88H25

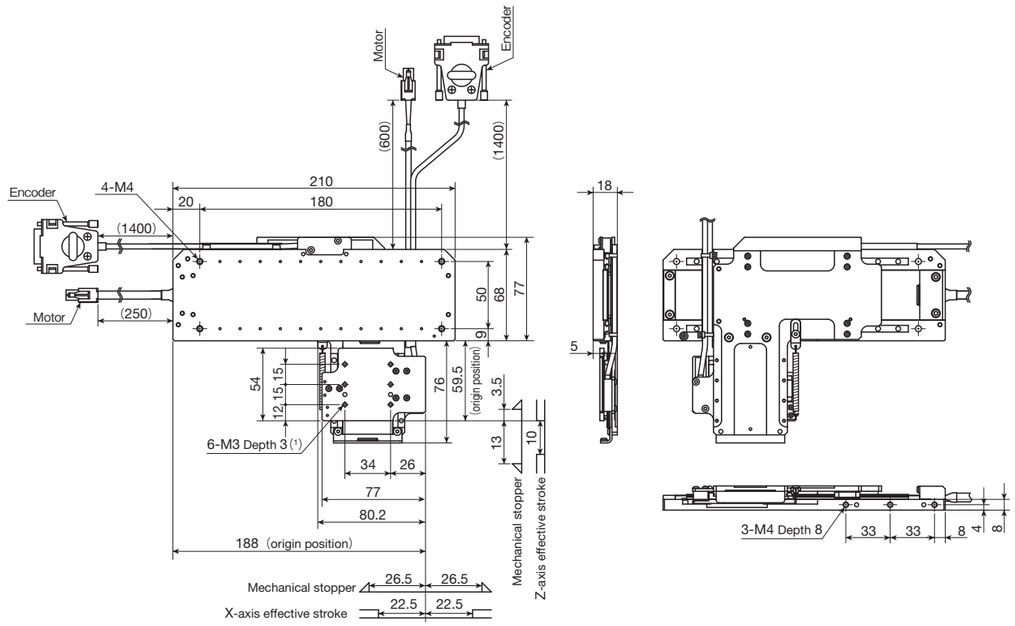


NT88H65

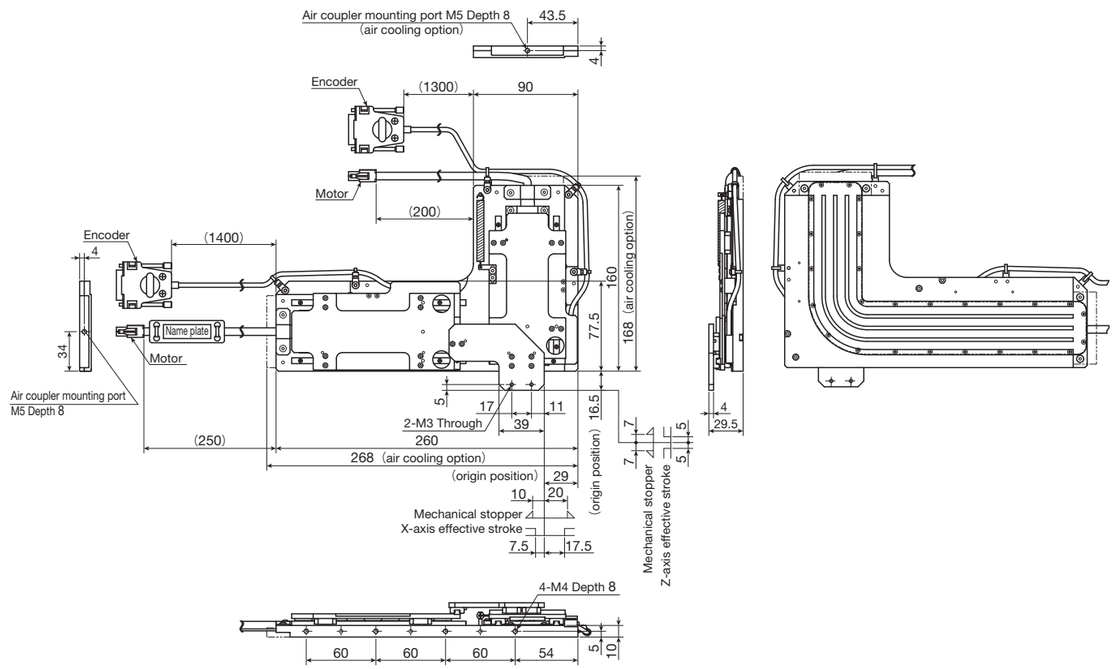


Note (1) Too deep insertion depth of the mounting bolt may affect the running performance of the moving table, so never insert a bolt longer than the depth of the tapped hole.

NT80XZ



NT90XZH



Note (1) Too deep insertion depth of the mounting bolt may affect the running performance of the moving table, so never insert a bolt longer than the depth of the through hole.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch