

# Nano Linear Motor NT...V



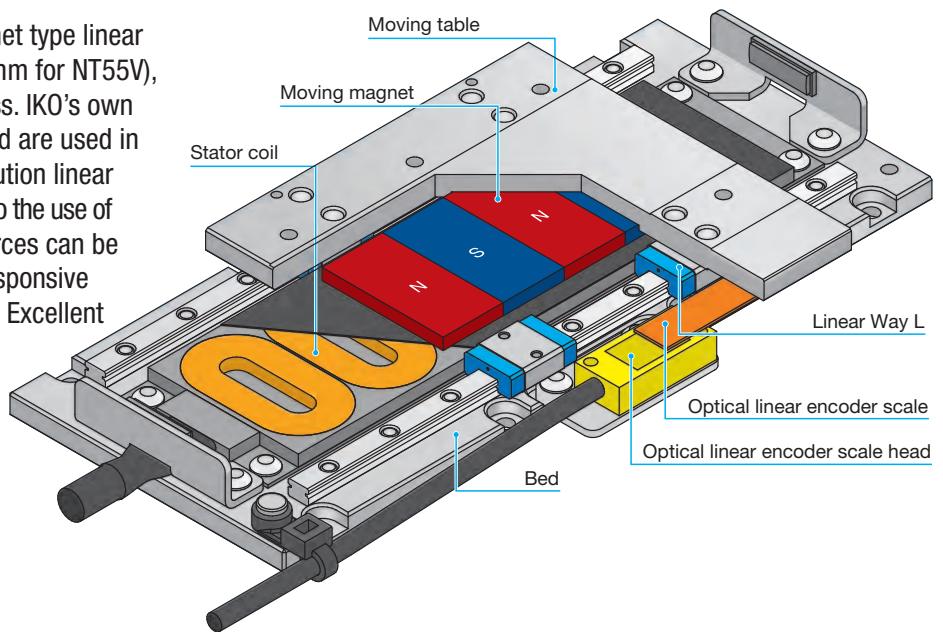
**IKO**

**MECHATRONICS SERIES**





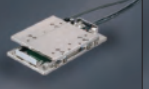
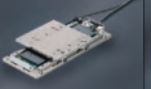

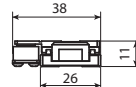
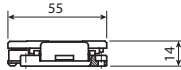
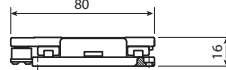
IKONT.COM

# NT...V

Nano Linear NT series is a family of moving magnet type linear motor tables with extremely low profile (only 14 mm for NT55V), high performance, and excellent cost effectiveness. IKO's own miniature Linear Ways guide the moving table, and are used in combination with the linear motor and high-resolution linear encoder to realize highly accurate positioning. Due to the use of high-strength neodymium magnets, large thrust forces can be produced and therefore high-speed and highly responsive positioning is possible, despite its very small size. Excellent reliability and cleanliness is realized thanks to adoption of moving magnet driving method which eliminates moving cables. EtherCAT and Ethernet IP drivers are also available and in combination with streamlined wiring result in smoother and higher speed accurate motion.

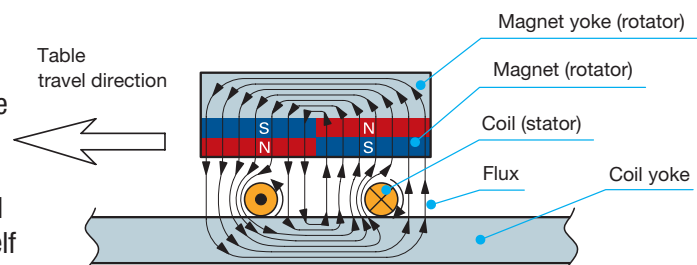


## Nano Linear NT Specifications List

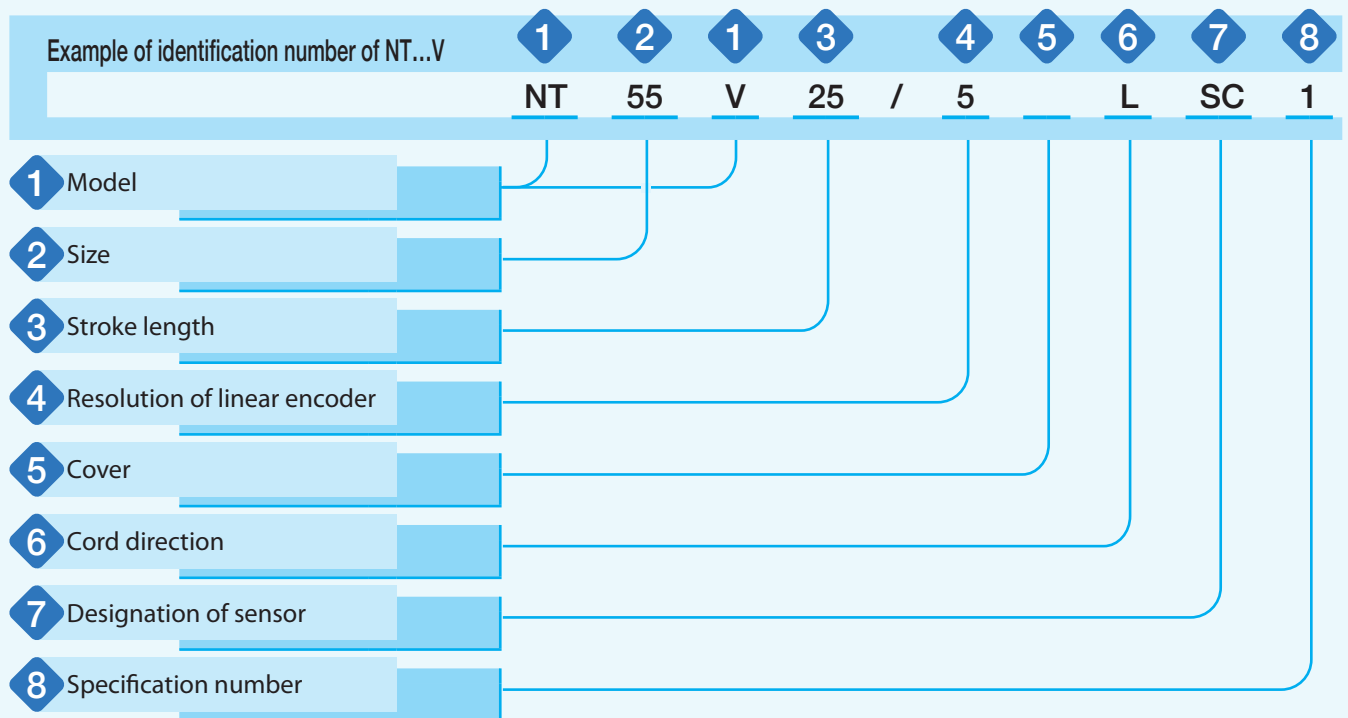
| Model and size            |      | Standard type<br>NT...V   |     |   |     |   |      |  |     |      |   |   |      |   |     |      |   |  |  |
|---------------------------|------|---|-----|---|-----|---|------|--|-----|------|---|---|------|---|-----|------|---|--|--|
|                           |      | NT38V10   |     | NT38V18   |     | NT55V25   |      | NT55V65  |     |      | NT80V25   |   |      | NT80V65   |     |      | NT80V120  |  |  |
|                           |      |  |     |  |     |  |      |  |     |      |  |   |      |  |     |      |  |  |  |
| Sectional shape           |      |  |     |   |     |  |      |  |     |      |   |  |      |   |     |      |   |  |  |
| 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 | 0.1  | 0.5   |  |  |
| Maximum speed             | mm/s | 270   | 500 | 270   | 500 | 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  |  |  |

## Operating principle of Nano Linear NT

Nano Linear NT is designed like an electric motor, such that the magnet and optical linear encoder act as the 'Rotor', whereas an air-core coil and optical linear encoder scale head act as the 'Stator'. As shown in the diagram on the right, the coil is subjected to a horizontal force due to a flux in the vertical direction that is generated by the magnet and coil yoke and this in turn generates a rotational flux around the coil. By switching the coil current to a certain direction, continuous thrust force in one direction can be obtained, producing linear motion of the rotor. Travel and positional accuracy are facilitated using acceleration control which is itself governed by current amount and linear encoder feedback.



# Identification Number



## Identification Number and Specification

|                                |  |
|--------------------------------|--|
| 1 Model                        | NT...V: Nano Linear NT...V   |
| 2 Size                         | 38: Width 38mm<br>55: Width 55mm<br>80: Width 80mm   |
| 3 Stroke length                | 10: 10mm (applicable to NT38V)<br>18: 18mm (applicable to NT38V)<br>25: 25mm (applicable to NT55V and NT80V)<br>65: 65mm (applicable to NT55V and NT80V)<br>120: 120mm (applicable to NT80V) |
| 4 Resolution of linear encoder | 1 : 0.1μm<br>5 : 0.5μm   |
| 5 Cover                        | No symbol: Without cover<br>D: With cover (applicable to NT38V)  |
| 6 Cord direction               | L : Leftward (Standard)<br>R : Rightward   |
| 7 Designation of sensor        | No symbol : Without sensor<br>SC : With sensor (limit and pre-origin) and sensor bracket<br>Applicable to NT55V and NT80V  |
| 8 Specification number         | 1: Specification number 1<br>The specification number is limited to 1.   |



## Drive/Control for Easy Setup – Operation of NT Actuators

The Copley Controls BPL drive (BPL-090-06) is a high-performance, DC powered drive capable of position, velocity, and/or force control of IKO's NT series linear actuators.

Offering a high degree of flexibility, the drive is capable of operating either as an:

- Intelligent Control with the ability to store motion programs (sequences) on-board. Sequences can be selected and initiated from a PLC or PC via RS-232(ASCII) or discrete I/O. It is also possible to set a sequence to run on power-up permitting “stand-alone” operation. Sequences are easily constructed and loaded to the drive using a “drag-and-drop” programming method, free CME2 setup software. Up to 32 sequences can be stored on board, and these can include motion, logic, math, conditional branching, and I/O control. For those desiring a *Script programming* method, a separate software programming tool is available permitting this.
- Servo-drive with abilities to work with any of the following command interfaces:
  - $\pm 10V$  force/velocity/position
  - Stepper commands (Pulse & Direction, Count-up / Count-down)
  - Master encoder following (Gearing/Camming. Up to 10 Cam Tables can be stored in the drive.)
  - PWM velocity/force command
  - CANopen
  - RS232 (ASCII or Binary , multi-drop Networking supported).
  - EtherCAT is optional – consult IKO.

When operating on a CANopen network, the drive operates as a CANopen DS-402 node. Supported modes include: Profile Position-Velocity-Torque, Interpolated Position Mode (PVT), and Homing.

Feedback from both incremental and absolute encoders is supported. Absolute protocols include: SSI, EnDat, and BISS (B & C).

A “multi-mode encoder port” functions as either an additional encoder input, or, an encoder output (allowing encoder feedback to be passed on to an upper-level-control) .

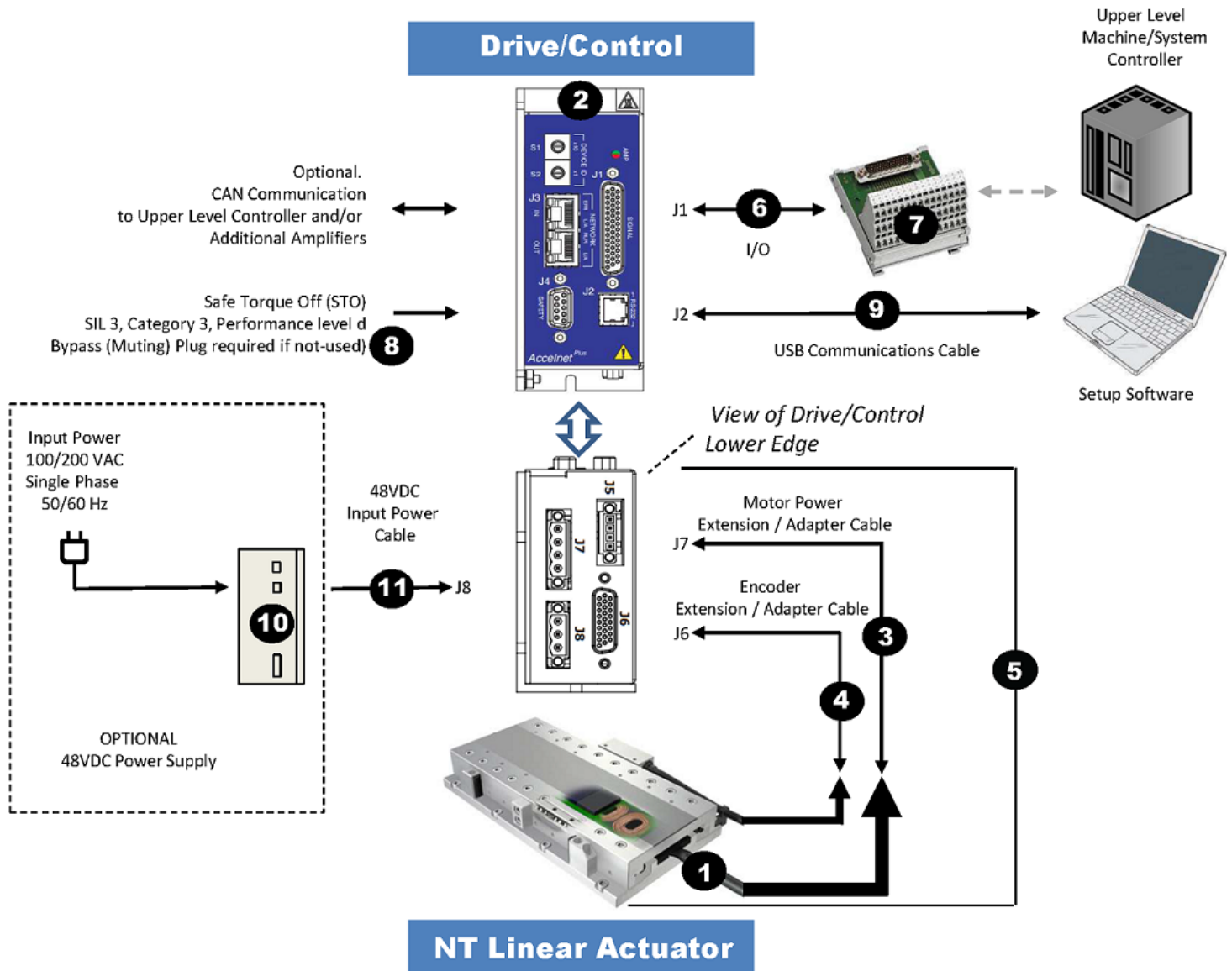
The drive is equipped with 11 digital inputs, 4 digital outputs, and 1 analog input (12-bit).

Drive power is transformer-isolated DC from regulated or unregulated power supplies. An AuxHV input is provided for “keep-alive” operation permitting the drive power stage to be completely powered down without losing position information, or communications with the control system.

Safe-Torque-Off (STO) functionality is included as standard, compliant to IEC 61800-5-2. (SIL3 , Category 3, PL d). This “Hardware only” safety circuit de-energized the drive's power-stage, preventing it from being operated by the digital control core.







| Item | Product                       | Part Number | Description  |
|------|-------------------------------|-------------|--|
| 1    | IKO Nano Linear Stage         | NTxxV       |  |
| 2    | Copley Drive/Controller       | BPL-090-06  | Digital Drive for Brushless/Brush Motors               |
| 3    | Motor Power Extension Cable   | SA0164251   | CA, PWR, NT-SERIES, BPL, 3 meters                      |
| 4    | Motor Encoder Extension Cable | SA0164252   | CA, ENC, NT-SERIES, BPL, 2 meters                      |
| 5    | Motor Limit Extension Cable   | SA0164253   | CA, LIM, NT-SERIES, BPL, 2 meters                      |
| 6    | I/O Cable                     | SA0164254   | CA, IO, BPL, 0.5 meter                                 |
| 7    | I/O Breakout Module           | X0119366    | 44 Pos Male HD DSub Breakout 11104 IMHD 44M            |
| 8    | STO Bypass Plug               | SA0164255   | CA, BPL STO BYPASS PLUG                                |
| 9    | USB Programming Cable         | D0166023    | USB to Serial RS232 Adapter                            |
| 10   | DC Power Supply Kit           | SA0164769   | Puls Power Supply AC Line Cable, 2 meters              |
|      |                               | CP5.481     | Power Supply, 120W, 100-240VAC 1PH, 48-56VDC, 2.5-2.1A |
| 11   | Drive DC Power Cable          | SA0166090   | DC Power Cable, Copley BPL Drive, 1 meter*             |

\*Cables can be made available in any custom length required.



Where Innovation Meets Automation

### Headquarters

18280 SW 108th Ave.  
Tualatin, OR 97062  
**Phone** 503.582.8100

### Northern California

47603 Lakeview Blvd.  
Fremont, CA 94538  
**Phone** 510.565.7525

### Southern California

10451 Roselle St., Ste. 100  
San Diego, CA 92121  
**Phone** 800.236.0607

### Washington

7815 S. 180th Street Kent,  
WA 98032  
**Phone** 425.430.0044

### Gulf

703 Main Street  
Lake Dallas, TX 75065  
**Phone** 940.565.9411

[www.olympus-controls.com](http://www.olympus-controls.com)



Innovation, Know-how & Originality

### Headquarters

91 Walsh Drive  
Parsippany, NJ 07054  
**Phone** 973.402.0254

### West Coast Operations

9830 Norwalk Blvd., Ste. 198  
Santa Fe Springs, CA 90670  
**Phone** 562.941.1019  
800.252.3665  
**Fax** 562.941.4027  
**email** [wco@ikonet.co.jp](mailto:wco@ikonet.co.jp)

### Silicon Valley Sales Office

1500 Wyatt Drive, Ste. 10  
Santa Clara, CA 95054  
**Phone** 408.492.0240  
**Fax** 408.492.0245

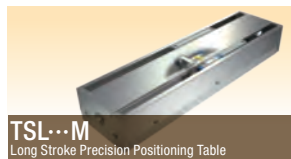
### Southwest Operations

6191 N. State Hwy. 161, Ste. 440  
Irving, TX 75038  
**Phone** 972.925.0444  
800.295.7886  
**Fax** 972.707.0385  
**email** [swo@ikonet.co.jp](mailto:swo@ikonet.co.jp)

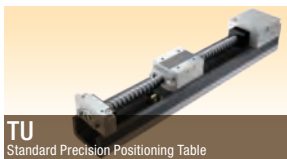
[www.ikont.com](http://www.ikont.com)

## About Olympus Controls

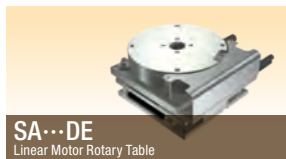
Olympus Controls is an Engineering Services company that specializes in the integration of motion control, machine vision, and robotic technologies. We help our clients with the ideation of innovative and robust solutions; then we collaborate with them to take their machine automation solution from concept to reality. Bringing thousands of unique automation projects to market has helped us develop an extensive range of technology and industry-process knowledge. These capabilities and know-how enable our Automation Team to set the benchmark for machine automation solutions.



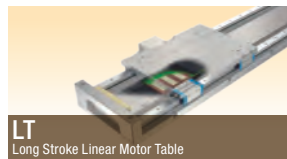
**TSL...M**  
Long Stroke Precision Positioning Table



**TU**  
Standard Precision Positioning Table



**SA...DE**  
Linear Motor Rotary Table



**LT**  
Long Stroke Linear Motor Table



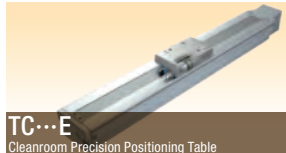
**TE**  
Low Profile Positioning Table



**TM**  
Miniature Table



**TX...M**  
High Rigidity Precision Positioning Table



**TC...E**  
Cleanroom Precision Positioning Table



**CTLH**  
High Rigidity X-Y Stage



**TZ**  
Precision Elevating Table