Driver Specification for Linear Motor Drive Tables

MR-J4

Specification of MR-J4, a driver for NT38V

- Low-voltage (DC24V) specification and compact design of 100×90×30 mm. It contributes to miniaturization of devices and compactness.
- Servo gain adjustment, including machine resonance suppression filter, advanced vibration control II, and robust filter, can be completed simply by turning on the onetouch tuning function. Easy driving of the cutting-edge vibration suppression function allows the machine to produce its best performance.
- Machine diagnosis, startup and adjustment of the linear motor can be easily performed thanks to parameter settings, monitor display and machine analyzer of the setup software (MR Configurator2).



Table 1 Specifications for MR-J4

Identification Number		MR-J4-03A6-NL156J154/ MR-J4-03A6-NL156J155
Outrat	Rated voltage	Three-phase AC13V
Output	Rated current	2.4A
	Voltage	DC24V
Main circuit power	Rated current	2.4A
supply input	Allowable power fluctuation	DC21.6V to 26.4V
	Voltage	DC24V
Original	Rated current	0.2A
Control circuit power supply input	Allowable power fluctuation	DC21.6V to 26.4V
Supply input	Power consumption	5.0W
Power supply	for interface	DC24V ±10% (required current capacity: 0.3 A)
Control metho	d	Sine wave PWM control/current control method
	erative power for servo regenerative resistor	0.7W
Dynamic brake	;	Built-in
Communication function		USB: connection with personal computer, etc. (MR Configurator2 supported)
Encoder output pulse		Supported (ABZ-phase pulse)
Analog monitor		2-channel
Position	Maximum input pulse frequency	4 Mpulses/s (with differential receiver), 200 kpulses/s (with open collector)
control mode	Command pulse magnification	Electronic gears A/Bx A = 1 to 1.6777215, B = 1 to 16777215, 1/10 < A/B < 4000
mode	Positioning complete width setting	0 pulses to ± 65535 pulses (command pulse unit)
Positioning mode		Point table method
Protective function		Overcurrent interrupt, regeneration overvoltage interrupt, overloading interrupt (electric thermal), servomotor overheat protection, encoder error protection, regeneration error protection, undervoltage protection, momentary power failure protection, overspeed protection, excessive error protection, magnetic pole detection protection, linear servo control error protection
Compliant overseas	CE marking	LVD:EN 61800-5-1/EN 60959-1 EMC:EN 61800-3
standards	UL standard	UL 508C (NMM S2)
Structure (protection degree)		Natural air cooling and opening (IP20)
	Ambient temperature	Operation: 0 to 55°C (keep freeze free), Storage: -20 to 65°C (keep freeze free)
	Ambient humidity	Operation/storage: 5% to 90% RH or lower (keep condensation free)
Environmental conditions	Atmosphere	Indoors (no exposure to direct sunlight) Must be free from corrosive gas, flammable gas, oil mist and dust
	Altitude	1,000 m or lower
	Vibration resistance	5.9 m/s ² or less, 10 Hz to 55 Hz (X, Y, Z directions)
Mass		0.2 kg

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Specifications for ADVA

- Applicable model numbers
- NT series: NT55V, NT80V, NT88H, NT...XZ, NT...XZH SA series: all model numbers LT series: all model numbers
- 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 to ± 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 3 Specifications for ADVA

Iabi	e 3 Specifications	TOF ADVA				
	Identification number	ADVA-01NL	ADVA-08NL	ADVA-R5ML		
Iten	n	ADVA-01NLEC	ADVA-08NLEC	ADVA-R5MLEC		
B	Input nower	Single-phase / Three-p	phase AC 200 to 230 V	Single-phase AC100 to 115V		
lsic	Input power	50 / 60Hz 50 / 60Hz				
Basic specification	Rated current /	1.2Arms / 3.6Arms	5.1Arms / 15.3Arms	1.2Arms / 3.6Arms		
eci	momentary current		1.3kVA			
fica	Power plant capacity	0.3kVA	0.2kVA			
tio	Protective structure (1)	Semi-enclosed IP20				
	Control mode	Position control / Speed control / Thrust force control				
Inpu	Speed command	Analog input: 0 to ±10 V / Maximum speed (gain configurable) or EtherCAT				
t/O	Thrust force command	Analog input: 0 to ±10 V / Maximum thrust force (gain configurable) or EtherCAT Line driver signal: 20 Mpps (non-isolated input / after 4-time multiplication)				
Input/Output relation function	Position command	0 11 (ated input / after 4-time multiplication) ated input / after 4-time multiplication)	or EtherCAT		
tre			nput terminal (6 input terminal for EtherCA	T specification) function by parameter		
atio			al / Open collector signal input (with interi			
n fu	Contact input /	DOTE / E4 V Contact sign				
ncti	output	[Output] Intelligent terminal selects 6 output terminal (4 output terminal for EtherCAT specification) function by parameter				
9		(Open collector signal output: sink output)				
	Built-in operator	Pulse train command specification: Five digit numeric display, five key push button / DIP switch (Modbus communication setting)				
		EtherCAT specification: 2-digit numeric display, DIP switch (node address setting for EtherCAT)				
⊐	External operator	Windows 7/8 (32-bit, 64-bit) PC can be connected (USB 2.0 full speed)				
ter	Regenerative braking circuit	Built-in				
na	Dynamic brake (2)	Built-in (motion condition configurable)				
Internal function			ad, main circuit overvoltage, memory error, mair			
n		external trip (motor temperature error), servo ON ground detection, control circuit under voltage, servo amplifier temperature error, drive				
ťö	Protective	prohibition error, power module failure, safe	prohibition error, power module failure, safety circuit failure, emergency shutdown, encoder failure, mismatch error, power reactivation			
ň	function	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				
		(network communication error, DC synchronization error, under voltage display)				
Ope	Ambient temperature in operation/	$0 \sim 55^{\circ}$ C / $-10 \sim 70^{\circ}$ C				
Operating environment	Storage temperature (3)					
g env	Operating humidity	20 to 90% RH (keep condensation free)				
rironr	Vibration resistance (4)	5.9m/s ² (0.6G) 10 to 55Hz				
lent	Service space	Altitude of 1000 m or below, indoor (no corrosive gas and dust)				
	Mass	0.7kg	1.2kg	1.1kg		
Natos (1) Protection method is compliant with JEM1020						

Notes⁽¹⁾ Protection method is compliant with JEM1030.

⁽²⁾ Use the dynamic brake for emergency stop

(³) The storage temperature is the temperature during transportation.

(4) Compliant with JIS 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.

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.

- <Operating conditions>
- Main body: NT55V25/05R + ADVA-01NL/NT55V25
- Acceleration/deceleration time: 12ms





	Item	Operating conditions	
		CPU: Pentium 4 1.8 GHz or higher	
PC	PC	HDD free space: 1 GB or more	
		Display resolution: 1024x768 or higher recommended	
Windows Vista 32-bi		Windows Vista 32-bit SP1	
	OS	Windows 7 (32-bit, 64-bit)	
		Windows 8 (32-bit, 64-bit)	
Remark: Windows [®] is a registered trademark of Microsoft			
Corporation in USA and other countries.			
Pentium is a registered trademark of Intel Corporation			
	in USA and other countries.		

Carrying mass: 200g Speed: 500mm/s Positioning complete width: $\pm 5\mu$ m Traveling distance: 10mm

MR-J4

Specifications for MR-J4

- Applicable model numbers NT series: NT55V, NT80V SA series: all model numbers
- Supports SSCNET II/H (high-speed serial bus). Higher speed and accuracy are realized by optical communication system.
- Servo gain adjustment, including machine resonance suppression filter, advanced vibration control II, and robust filter, can be completed simply by turning on the one-touch tuning function. Easy driving of the cuttingedge vibration suppression function allows the machine to produce its best performance.
- 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 Configurator2).

Table 5 Specifications for MR-J4

Output Rated voltage Three-phase AC170V Rated current 1.1A Voltage / Frequency Single-phase / Three-phase AC200-240V 50/60Hz Main circuit power Allowable power supply Allowable power fluctuation Within ± 5% Voltage / Frequency Single-phase AC200-240V 50/60Hz Allowable power Allowable frequency Voltage / Frequency Single-phase AC200-240V 50/60Hz Allowable power Single-phase AC200-240V 50/60Hz Allowable power Single-phase AC170-264V Allowable power Single-phase AC170-264V Allowable power Single-phase AC170-264V Allowable power Single-phase AC170-264V fuctuation Single-phase AC170-264V Control Frequency Within ± 5% fluctuation Single-phase AC170-264V Single-phase AC170-264V Single-phase AC170-264V Consumption DC24V ± 10% (required current capacity: 0.3A (includes CN8 connector signal)) Structure (protection class) Natural air cooling and opening (IP20) Control Control method Sine wave	Identification Number			MR-J4-10B-RJ	
Basic Output Rated current 1.1A Main circuit power Main circuit power Allowable power fluctuation Single-phase / Three-phase AC200-240V 50/60Hz Supply Allowable power fluctuation Single-phase / Three-phase AC170-264V Specification Voltage / Frequency Single-phase AC200-240V 50/60Hz Control circuit power Voltage / Frequency Single-phase AC200-240V 50/60Hz Power supply Voltage / fluctuation Single-phase AC170-264V Power supply Voltage / fluctuation Single-phase AC170-264V Power supply Power supply Within ± 5% Power supply for interface DC24V ± 10% (required current capacity: 0.3A (includes CN8 connector signal)) Structure (protection class) Natural air cooling and opening (IP20) Control method Supported (A2-phase pulse) Input/Output Encoder output pulse Supported (A2-phase pulse) Internal function Communication function USB: connection with personal compute, etc. (MR Configurator2 supported) Operating environment Protective function USB: connection with personal compute, etc. (MR Configurator2 supported) Overcurrent interrupt, regeneration overol	Item		Bated voltage	Three-phase AC1701/	
Basic specification Voltage / Frequency Single-phase / Three-phase AC200-240V 50/60Hz Basic specification Allowable power fluctuation Single-phase / Three-phase AC170-264V Control circuit power Allowable power fluctuation Single-phase AC200-240V 50/60Hz Frequency Within ± 5% Hittoutation Frequency Allowable power supply Frequency Allowable power supply Frequency Allowable power supply Allowable power fluctuation Power supply Allowable power fluctuation Power supply Frequency Allowable power supply Control fluctuation Power supply Frequency Allowable power		Output	<u>_</u>		
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Vibration resistance 5.9m/s² or less, 10Hz to 55Hz (X, Y, Z directions)	1 0	Atmosphere			
		Altitude		1 000m or lower	
Mass 0.8kg		Vibration resistance		5.9m/s ² or less, 10Hz to 55Hz (X, Y, Z directions)	
	Mass			0.8kg	

Motion Network

Drivers for linear motor drive tables include those supporting motion networks EtherCAT, SSCNET II/H, MECHATROLINK, and RTEX. Motion networks realize 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 a synchronization system with more than one table can easily be established.



Model	
EtherCAT	This is an Ethernet-based open netrallowing the real time control. High sprealize the higher performance and on the market can be used and vario
SSCNET II/H	This is a motion network communit Electric Corporation. It applies the conventional SSCNET.
MECHATROLINK	The open field network communi- Developed by Yaskawa Electric Corp
RTEX	RTEX (Realtime Express) is an advar in order to deliver the high real time communication (100Mbps), and sup costs.

Features

twork communication system developed by Beckhoff of Germany, speed communication and high accuracy inter-node synchronization I higher accuracy of devices. In addition, Ethernet cables available ous wiring types can be supported.

ication system for servo system control developed by Mitsubishi e optical fiber cables, so noise immunity is improved relative to

ication that connects the controller and various components. poration and managed by MECHATROLINK Members Association.

anced network developed independently by Panasonic Corporation, ne performance required for servos. It offers extremely high-speed upports commercially available LAN cables to help reduce system