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DIGITAX SF II

Model Selection Guide for MV Series AC Servo Drives

DRIVE OBSESSED



A drive expert from UK since 1973

Control Techniques (hereinafter referred to as CT) is an expert in motion control technology, formerly known as KTK, founded in 1973 in Newtown, Wales, United Kingdom. The vision of the company's founders is to provide state-of-the-art drives that fully meet market demands, and this vision has always been guiding the company's development.

In 1985, CT launched its Mentor product, the world's first all-digital DC drive, meanwhile KTK was renamed as Control Techniques and was listed on the London Stock Exchange. With our deep involvement in the industry, we have solved one of the biggest challenges in the field of automation: the ability to drive open-loop motors, closed-loop motors, and servo motors, and the ability to program. That is Unidrive, an intelligent driver introduced in 1995.

In 1995, CT joined Emerson, also known as Emerson CT. Since then, more market opportunities have opened up to our high performance drives, which have been designated to be used in cranes, elevators, consoles, high performance automation plants, and other industries. In July 2017, CT joined Nidec Europe B.V.

With nearly 50 years of expertise in driving technology, CT can provide our customers with high performance, high reliability, and energy efficient products. We are committed to the development of industrial automation, from product development at the UK headquarters to 45 automation centers around the world, providing comprehensive industrial solutions.



1000+ OEM clients



5,000,000+ drives installed



1000+ employees



Business extends to 70 countries/regions



WWW.NIDEC-CT.COM

Global presence Local support

Our experienced local application engineers will provide you with driving system design and technical support to create a greater value for you, no matter where you are.



Excellent Performance

With more than 45 years of drive design experience, our drives have excellent performance.



Trustworthy Technology

Robust design and high manufacturing quality ensure the durabilities of our millions of drives installed globally.



Open Design Architecture

Based on an open design architecture, our drives support all major communication protocols.



Embedded Intelligence

Precise motor control and a higher level of embedded intelligence ensure a higher productivity and efficiency of your equipment.



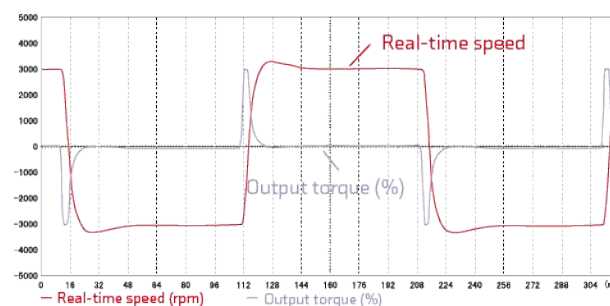
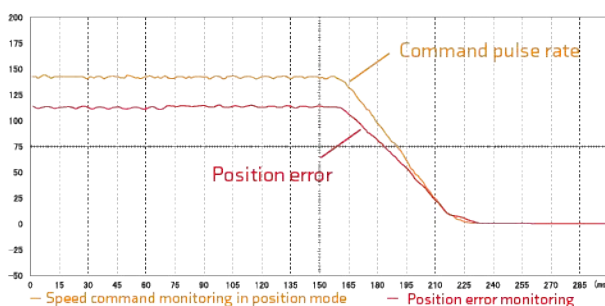
DIGITAX SF II-MV Series Servo System



DIGITAX SF II MV series AC servo drives adopt a high-performance digital signal processor — Advanced RISC Machine (ARM) processor, an intelligent power module (IPM), and advanced and optimized control algorithms, to precisely control torque, speed and position.

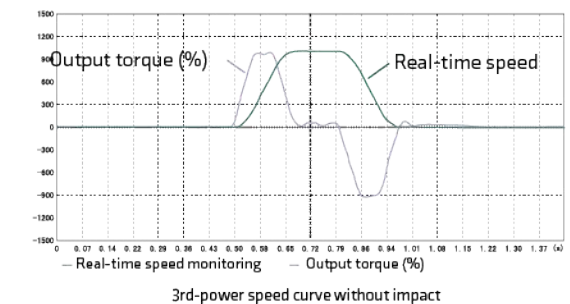
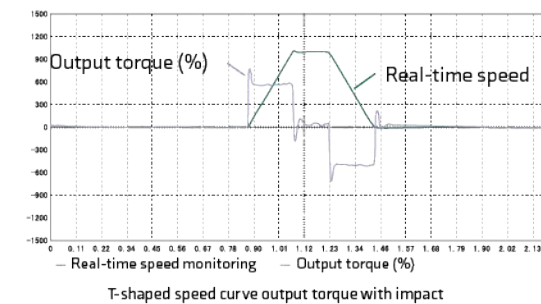
High-Speed Dynamic Response

- Speed response frequency: 4 KHz
- Position command adjustment time: less than 5 ms
- The time for acceleration from -3000 rpm to 3000 rpm: 10 ms



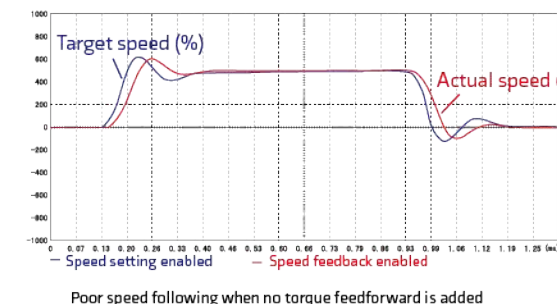
3rd-Power Speed Curve Planning in Position Mode

In traditional position planning, the trapezoidal velocity curve planning algorithm is used, while the MV series servo system uses the 3rd-power speed curve algorithm for this purpose, which can avoid outputting high-frequency torque to reduce mechanical shock and improve processing efficiency.

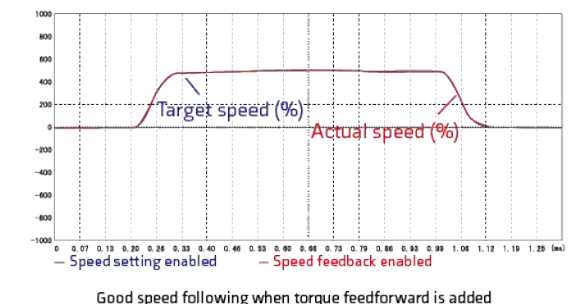


Torque Feedforward Control

Torque feedforward refers to obtaining the torque to be output by the motor by computing the set speed command, and directly setting the torque to the torque loop, to make the actual motor speed quickly keep up with the target speed. The torque feedforward coefficient is determined by the load inertia. The greater the load inertia, the greater the coefficient. The coefficient value can be obtained via inertia learning.



Poor speed following when no torque feedforward is added

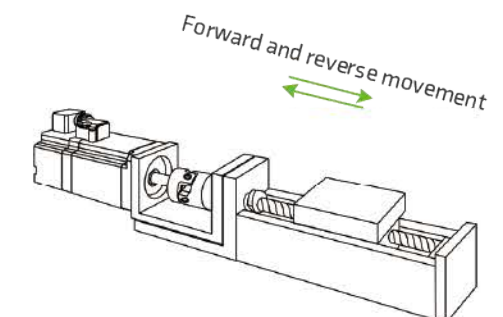


Good speed following when torque feedforward is added

Load Inertia Identification

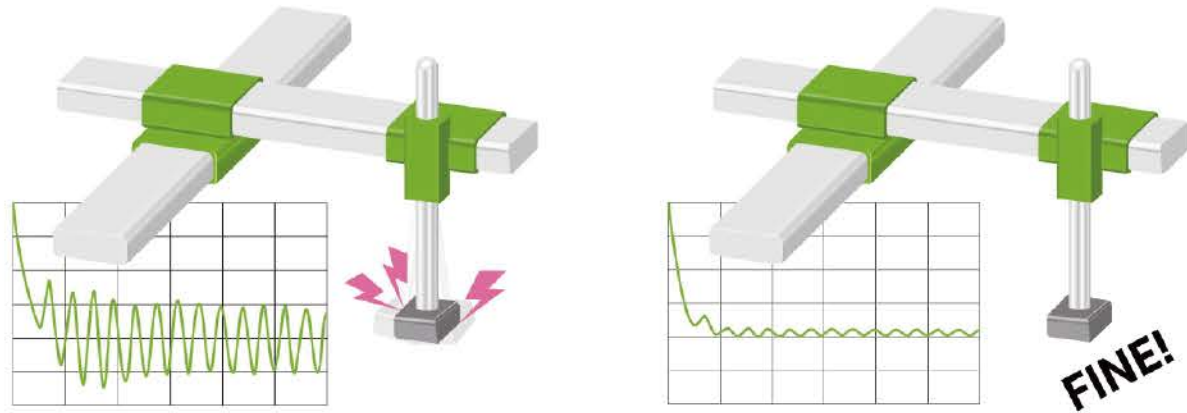
The servo system supports load inertia identification. It can automatically identify the load inertia ratio by controlling the motor's acceleration and deceleration rotation times, and then automatically compute the required gain in accordance with the inertia ratio and the set rigidity level.

- Enter FN007 to trigger the inertia identification
- Forward and reverse movement of the motor
- Inertia learning completed



▣ Vibration Suppression

The internal low-pass filter and notch filter can effectively suppress the instantaneous low-frequency vibration generated at the shutdown and the swing vibration at the end of the long-swing-arm mechanism.



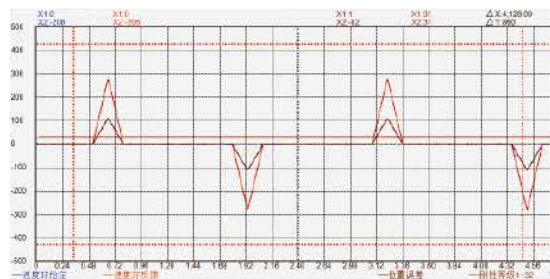
● Vibration suppression disabled

● Vibration suppression enabled

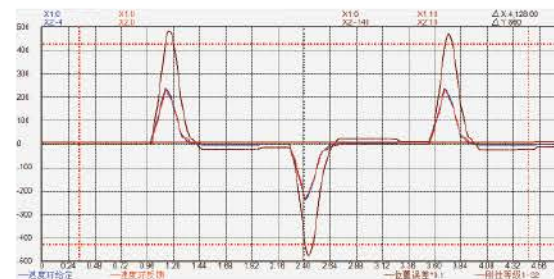
▣ Easy Gain Adjustment

The drive can achieve the servo parameter self-adjustment by setting the servo rigidity level. The higher the rigidity level, the higher the servo rigidity and the faster the response, and vice versa.

A₀₁ Rigidity level set to 31
The higher the rigidity level,
the faster the response



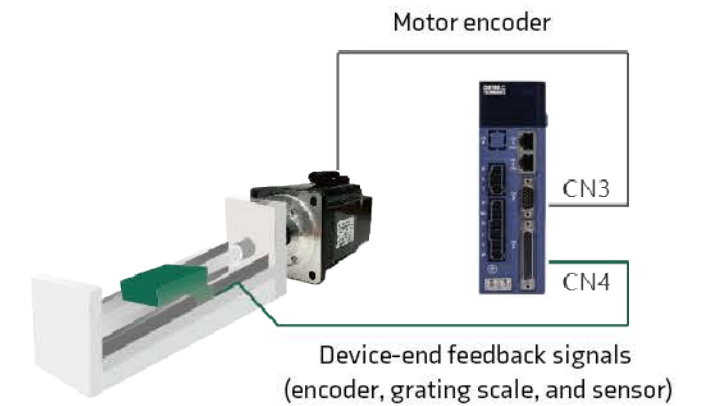
B₀₂ Rigidity level set to 10
The lower the rigidity level,
the slower the response



▣ Closed-Loop Control

When the motor is applied to feeding, if the motor displacement is inconsistent with the actual displacement of the material due to the relative sliding between the material and motor, a secondary encoder shall be connected to measure the actual displacement of the material.

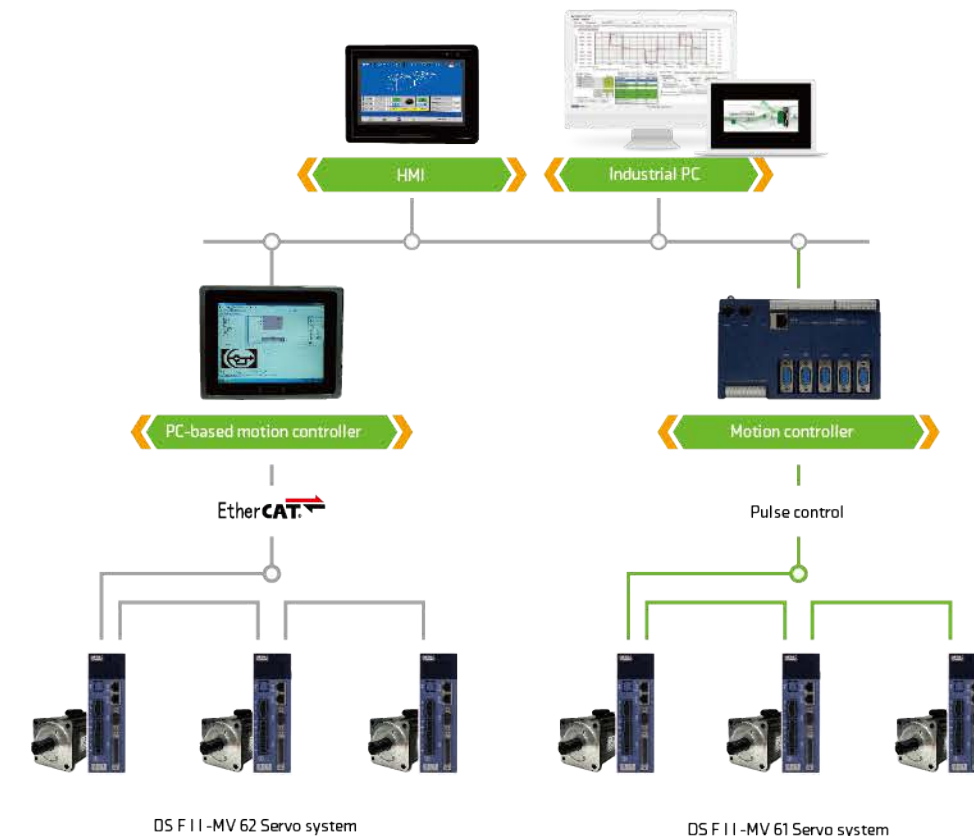
Then the servo drive will control the motor speed according to the set position command and the position signal fed back by the secondary encoder, to make the set position command consistent with the position fed back by the secondary encoder, which can effectively improve the material processing accuracy.



▣ Flexible Position Command Overlay

Position command can be set as the superposition of two pulses, that is, tracking the sum of the pulse commands of the two pulses simultaneously. It can also be set as the overlay of pulse commands and internal planning position commands, that is, tracking traditional pulses and position commands planned at multiple internal positions.

Supporting pulse control and EtherCAT high-speed bus control modes



Servo Drive Model Description

Naming Rules

MV	61	—	01	2	003	A	A	1
1	2		3	4	5	6	7	8

- Product series: DIGITAX SF II MV series
- Communication mode: 61 — Analog, and pulse train
62 — EtherCAT bus
- Base number: 01, 02, 03, 04, 05
- Voltage: 2 — Three-phase AC 220 V
4 — Three-phase AC 380 V
- Rated current: 003 — 3 A
006 — 6A
012 — 12A
007 — 7 A (matched with three-phase 380 V)
016 — 16 A (matched with three-phase 380 V)
020 — 20 A (matched with three-phase 380 V)
- Encoder type: A — Communication encoder
- Version code: A
- Drive type: 1 — Standard, 2 — Intelligent

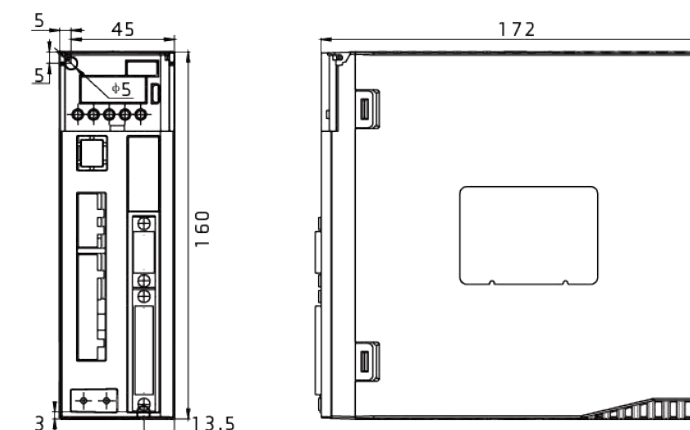
Product Features

- A variety of specifications and models available, with power of 200 W – 7.5KW
- Multiple encoder feedback interfaces for incremental/wire-saving encoder, 17-bit/23-bit absolute encoder, etc.
- Multiple communication protocols, including Modbus and EtherCAT
- Speed response frequency up to 4 kHz
- Voltage feedforward control, torque feedforward control, and speed feedforward control
- Command low-pass filtering and median filtering functions
- Position command planning, and built-in T-shaped speed curve planning
- 3rd-power speed curve planning
- Dynamic and smooth switching of electronic gear ratios
- 35 standard zero return modes
- Common DC bus supported
- CE-compliance

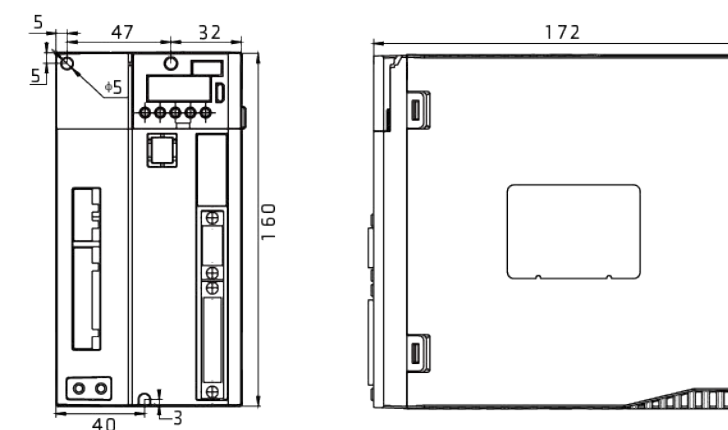
Mounting Dimensions of Drive

(Unit: mm)

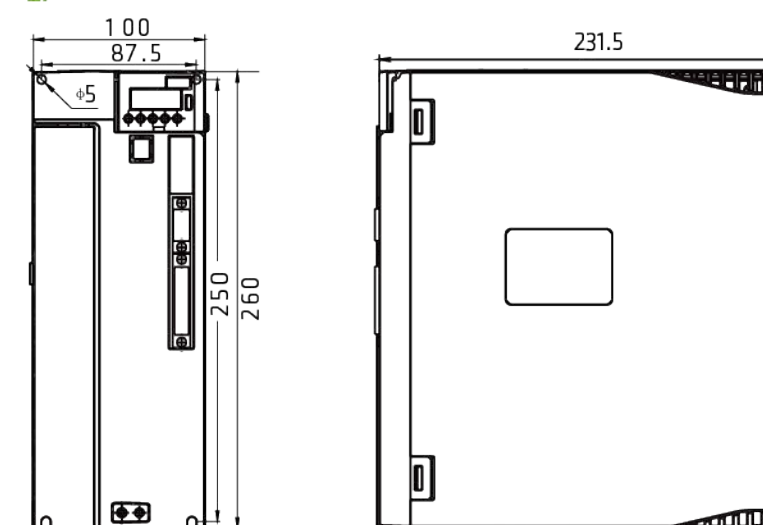
01. Matched current (A) 3 – 6



02. Matched current (A) 7 – 12



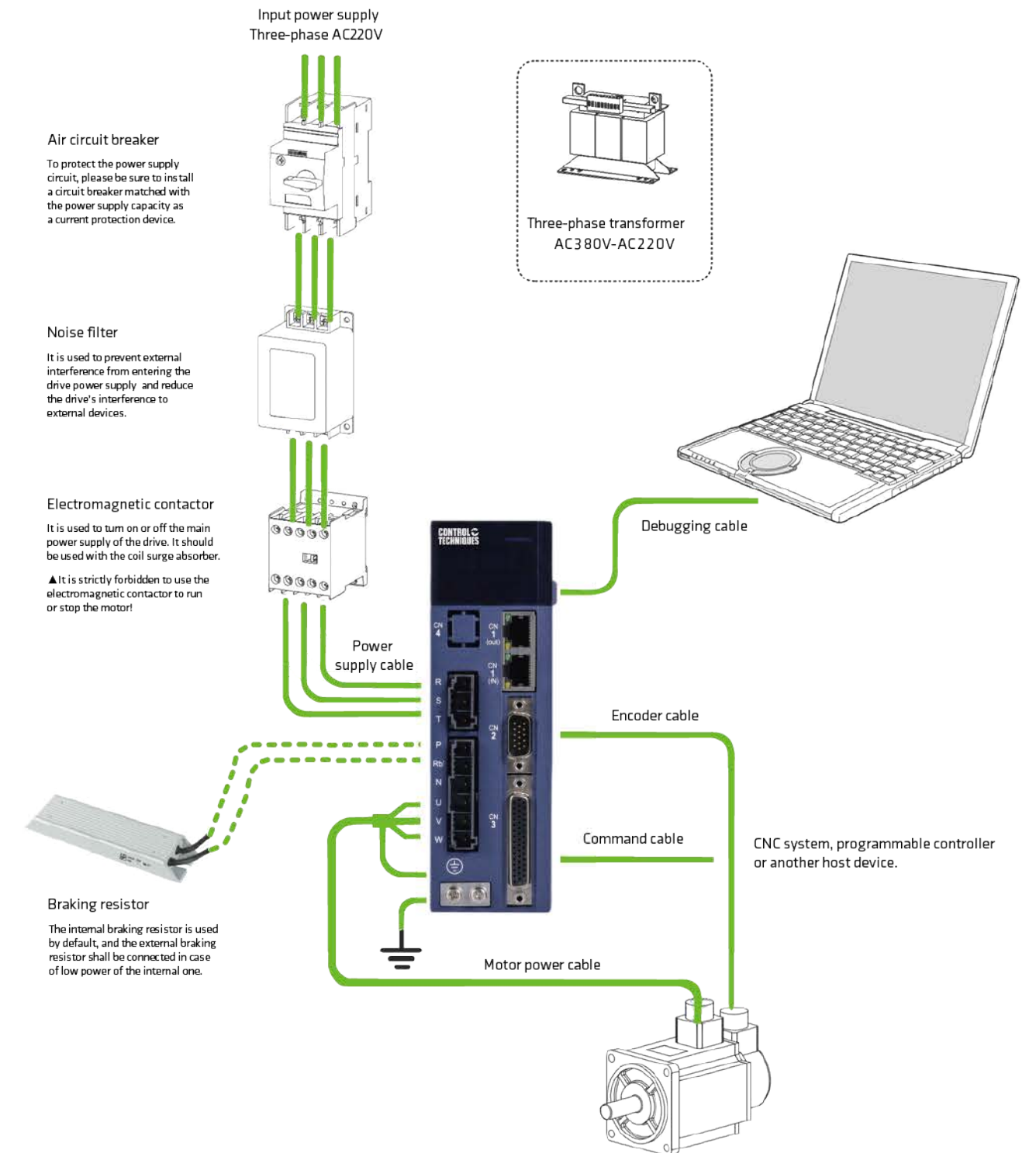
03. Matched current (A) 16 – 27



▣ Mounting Dimensions of Drive

Voltage	Control mode	Single-phase/three-phase full-bridge rectification SVPWM drive
Encoder	Encoder feedback	17-bit/23-bit Tamagawa absolute encoder
	Pulse type	Differential input, and open collector
Pulse Input	Frequency range	Differential input, 0 – 500 kHz, pulse width greater than 1 us, open collector; 0 – 200 kHz, pulse width greater than 2.5 us
	Pulse mode	Pulse + direction; AB pulse; CW + CCW
Analog Input	Voltage range	-10 V – 10 V
	Input impedance	10kΩ
DI/DO	Maximum frequency	1.5 kHz
	Interface type	NPN/PNP
Communication	Protocol type	Modbus/EtherCAT
	Command input mode	Pulse command / internal position planning
Position Mode	Command smoothing mode	Low-pass filtering / median filtering
	Electronic gear ratio	N/M; (M=1~2147483647, N=1~2147483647)
	Torque limit	Internal torque limit / analog torque limit
	Feedforward compensation	Speed feedforward / torque feedforward
Speed Control Mode	Torque compensation	Fixed torque compensation / analog torque compensation / automatic torque compensation
	Command input mode	Pulse frequency / analog input / internal speed planning
	Speed control range	1 - maximum speed
	Bandwidth	1kHz
	Torque limit	Internal torque limit / analog torque limit
	Command smoothing mode	Low-pass filtering / median filtering
Torque Control	Feedforward compensation	Torque feedforward
	Torque compensation	Fixed torque compensation / analog torque compensation / automatic torque compensation
	Command input mode	Internal torque setting / analog control torque
	Torque compensation	Fixed torque compensation / analog torque compensation / automatic torque compensation
Digital Input	Speed limit	Internal speed limit / analog speed limit
	Drive enabling, drive resetting, forward jogging, reverse jogging, speed setting reversing, position command disabling, position command reversing, pulse command disabling, electronic gear ratio switching, position error resetting and rounding toward zero, fault resetting, and so on	
Digital Output	Drive enabling, speed deceleration, speed acceleration, zero speed, forward rotation, and reverse rotation. Fault output, positioning completion output, positioning proximity output, and so on	
	Hardware over-current, over-voltage, under-voltage, encoder fault, drive over-temperature, over-speed, excessive position error, motor overload, motor stall, braking resistor overload, and so on	
Installation Environment Requirements	Barometric pressure	86 – 106kPa
	Ambient temperature	0 – 55 °C
	Ambient humidity	0 – 90 %RH
	IP rating	IP20
Fault Protection	Vibration	0 – 4.9 m/s – 2

▣ Illustration of Connected Devices



Introduction to the Software Interface

▶ Main Functions of the Host Computer

- Monitoring the operation curve of any parameter in real time
- Saving and loading operation curve data
- Analyzing operation curve data
- Updating all the parameters of the drive
- Reading all the parameters of the drive
- Executing macro
- Performing inertial self-learning and gain self-adjustment
- Editing parameters offline

▶ Host Computer Display Interface


The main interface displays: Waveform Attribute interface, Sampling Control interface, Trigger Mode, and Shaft Control

▶ Cable Model Description

M	B	A	01	P	03
1	2	3	4	5	6

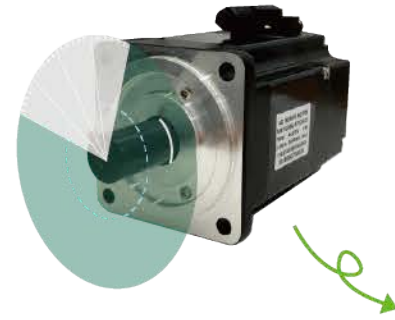
1. M — Power cable, S — Encoder cable
2. A — Movable cable, B — Fixed cable
3. A — Non-encoder cable, C — Incremental encoder cable
S — Absolute encoder cable, B — Absolute encoder cable with battery
4. For non-encoder cable: 01 — 3 A (current), 02 — 7 A, 03 — 12 A, 04 — 27 A
For encoder cable: 01 — Standard drive encoder cable (DB9), 02 — Intelligent drive encoder cable (DB15)
5. Connector: P — HDV motor 80 flange and below, M — HDV motor 110 - 130 flange, E — HDV motor 180 flange
6. Length: 03 — 3 m, 05 — 5 m, 10 — 10 m, 15 — 15 m, 20 — 20 m, 25 — 25 m

▶ List of Accessories

	Name	Photo	Remarks
Plugs	Power supply terminal		Suitable for drives of 01 or 02 structure
	CN3 encoder plug		Drive-side encoder plug
	CN4 control terminal plug		Signal Input/output terminal. Users need to prepare the cables.
Cables	Encoder connecting cable		Available cable lengths include 3 m, 5 m, 10 m, and 15 m and independent connectors can be provided upon request.
	Power cable		Available cable lengths include 3 m, 5 m, 10 m, and 15 m, and independent connectors can be provided upon request.
	Drive monitoring cable		If your computer has no RS-232 port, please purchase a USB to RS232 adapter cable.
	USB to RS232 adapter cable		Please purchase it as needed.
	Ethernet hunter		Please purchase it as needed.

HDV Series AC Servo Motors

HDV series motors have the following advantages:
 Equipped with 5 pairs of high-performance poles, achieving high dynamic but small size;
 Made up of JIS high-grade silicon steel sheets, featuring a low iron loss and high permeability;
 Based on permanent magnets with super-high intrinsic coercivity and high resistance to demagnetization;
 Based on the 10-pole rotor and the 12-slot stator design, greatly reducing the motor torque ripple.



23bit (absolute) / 17bit (absolute)

- **Precise positioning**
 HDV series motors can be equipped with 23-bit absolute encoders to improve their positioning precision and stability during low-speed operation. They also support multi-turn absolute positioning mode and battery power supply to avoid motor positioning failure due to power outage.

Naming Rules

HDV	80	E	075	H	30	60	0	J	A	1
1	2	3	4	5	6	7	8	9	10	11

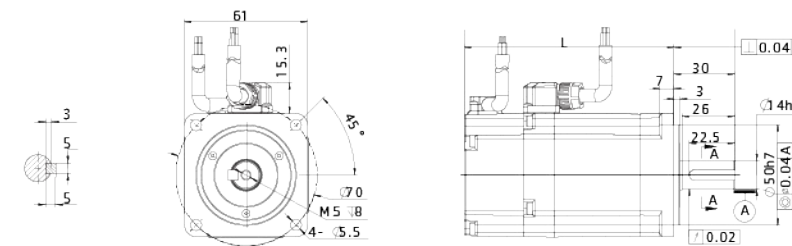
- Motor type: HDV series
- Base number: 60 flange, 80 flange, 110 flange, 130 flange, and 180 flange
- Voltage: E — Three-phase AC220V U — Three-phase AC380V
- Power: 010 — 100 W 100 — 1 KW
 020 — 200W 150 — 1.5KW
 040 — 400W 200 — 2KW
 075 — 750W
- Inertia: S — Low inertia; M — Medium inertia; H — High inertia
- Rated speed: X 100 RPM
- Maximum speed: X 100 RPM
- Brake: 0 — Without brake; 5 — With brake;
- Output shaft/oil seal: S — Straight shaft/without oil seal
 K — Spline shaft/without oil seal
 R — Straight shaft/with oil seal
 J — Spline shaft/with oil seal
- Encoder type: A — 23-bit absolute encoder; E — 17-bit magnetic encoder;
- Derived number: 1

Parameters and Dimensions of HDV Series Permanent Magnet Servo Motors

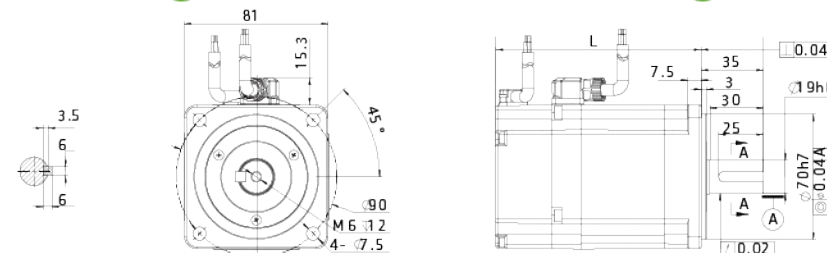
Motor Model	HDV60E020H3060	HDV60E040H3060	HDV80E075H3060	HDV80E100H3060
Rated power (KW)	0.2	0.4	0.75	1
Rated voltage (V)	220	220	220	220
Rated current (A)	1.6	2.5	4.8	6.4
Maximum instantaneous current (A)	4.8	7.5	14.4	19.2
Rated speed (rpm)	3000	3000	3000	3000
Max speed (rpm)	6000	6000	6000	6000
Rated torque (N.m)	0.64	1.27	2.4	3.2
Instantaneous maximum torque (N.m)	1.92	3.81	7.2	9.6
Rotor inertia (with brake) [(kg.m²)*10]	0.24 (0.28)	0.45 (0.5)	1.3 (1.5)	1.67 (1.9)
Torque coefficient (N.m/A)	0.44	0.51	0.54	0.55
Electrical time constant (ms)	1.5	2.2	3.9	3.7
Weight (with brake) (KW)	1.1	1.5	2.8	3.7
Protection rating/cooling mode	IP65/natural cooling			

Matched Drive Model	MV 6-port-012003	MV 6-port-012003	MV 6-port-012006	MV 6-port-012006
Rated current (A)	3	3	6	6
Dimensions (see Page 9 for details)	01	01	01	01

Mounting Dimensions of 60 Flange



Mounting Dimensions of 80 Flange

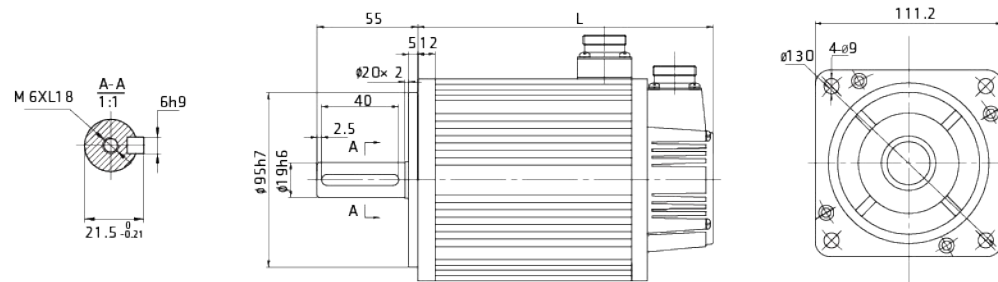


Motor Dimensions	HDV60E020H3060	HDV60E040H3060	HDV80E075H3060	HDV80E100H3060
L (mm)	86	108	118	139
L (with brake) (mm)	123	145	160	172

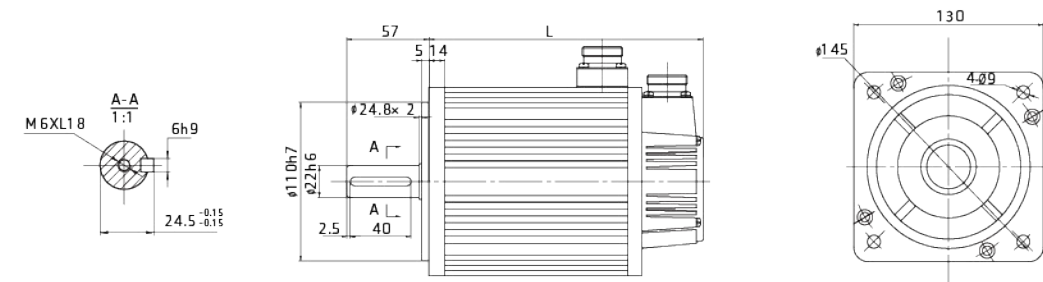
Motor Model	HDV110E 120H3035	HDV110E 180H3040	HDV130E 100H2530	HDV130E 150H2530	HDV130E 150H1520	HDV130E 200H2530	HDV130E 260H2530	HDV130E 230H1520
Rated power (KW)	1.2	1.8	1	1.5	1.5	2	2.6	2.3
Rated voltage (V)	220	220	220	220	220	220	220	220
Rated current (A)	5	6	4	6	6	7.5	10	9.5
Rated speed (rpm)	3000	3000	2500	2500	1500	2500	2500	1500
Max speed (rpm)	3500	4000	3000	3000	2000	3000	3000	2000
Rated torque (N.m)	4	6	4	6	10	7.7	10	15
Instantaneous maximum torque (N.m)	12	18	12	18	25	22	25	30
Rotor inertia (with brake) [(kg.m²)*10]	5.4 (5.85)	7.6 (8.05)	8.5 (8.95)	12.6 (13.05)	19.4 (20.88)	15.3 (15.75)	19.4 (20.88)	27.7 (29.18)
Torque coefficient (N.m/A)	0.8	1	1	1	1.67	1.03	1	1.58
Electrical time constant (ms)	3	3.2	2.32	3.26	2.91	2.91	3.36	4.05
Weight (KW)	6	7.9	6.2	7.4	10.2	8.3	9.8	12.6
Protection rating/cooling mode	IP65/natural cooling							

Matched Drive Model	MV 6-port -012006	MV 6-port -012006	MV 6-port -012006	MV 6-port -012006	MV 6-port -012006	MV 6-port -022012	MV 6-port -022012	MV 6-port -022012
Rated current (A)	6	6	6	6	6	12	12	12
Dimensions (see Page 9 for details)	01	01	01	01	01	02	02	02

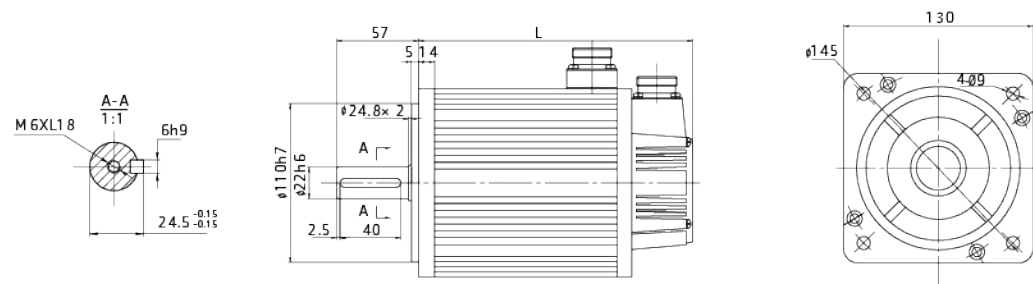
Mounting Dimensions of 110 Flange



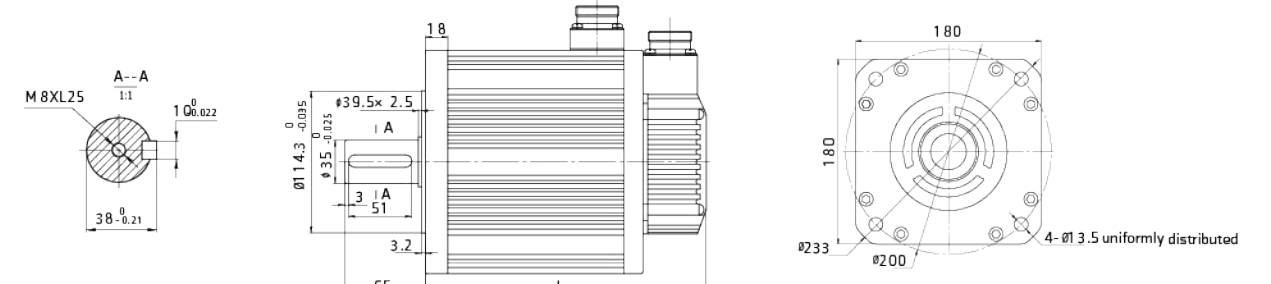
Mounting Dimensions of 130 Flange



Mounting Dimensions of 130 Flange



Mounting Dimensions of 180 Flange



Motor Dimensions	HDV110E 120H3035	HDV110E 180H3040	HDV130E 100H2530	HDV130E 150H2530	HDV130E 150H1520	HDV130E 200H2530	HDV130E 260H2530	HDV130E 230H1520
L (mm)	189	219	166	179	179	192	209	241
L (with brake) (mm)	263	293	223	236	236	249	290	322

Motor Dimensions	HDV130U 200H2530	HDV130U 260H2530	HDV130U 230H1520	HDV180U 300H1520	HDV180U 450H2025	HDV180U 430H1520	HDV180U 550H1520	HDV180U 750H1520
L (mm)	192	209	241	232	243	262	292	346
L (with brake) (mm)	249	290	322	304	315	334	364	418

Model Selection Table

Flange	Torque (N.m)	Type	Servo Motor Model (17-Bit Magnetic Encoder)	Drive Model (Standard-Type)	Power Cable	Encoder Cable
60	0.64	General	HDV60E020H30600JE1	MV61-012003AA1	MBA01P03	SBS01P03
	0.64	Brake	HDV60E020H30605JE1	MV61-012003AA1	MBA01P03	SBS01P03
	1.27	General	HDV60E040H30600JE1	MV61-012003AA1	MBA01P03	SBS02P03
	1.27	Brake	HDV60E040H30605JE1	MV61-012003AA1	MBA01P03	SBS02P03
80	2.4	General	HDV80E075H30600JE1	MV61-012006AA1	MBA02P03	SBS01P03
	2.4	Brake	HDV80E075H30605JE1	MV61-012006AA1	MBA02P03	SBS01P03
	3.3	General	HDV80E100H30600JE1	MV61-012006AA1	MBA02P03	SBS01P03
	3.3	Brake	HDV80E100H30605JE1	MV61-012006AA1	MBA02P03	SBS01P03
110	5	General	HDV110E150H30350JE1	MV61-012006AA1	MBA02M03	SBS01M03
	5	Brake	HDV110E150H30355JE1	MV61-012006AA1	MBA02M03	SBS01M03
	6	General	HDV110E180H30400JE1	MV61-012006AA1	MBA02M03	SBS01M03
	6	Brake	HDV110E180H30405JE1	MV61-012006AA1	MBA02M03	SBS01M03
130	4	General	HDV130E100H25300JE1	MV61-012006AA1	MBA02M03	SBS01M03
	4	Brake	HDV130E100H25305JE1	MV61-012006AA1	MBA02M03	SBS01M03
	5	General	HDV130E130H25300JE1	MV61-012006AA1	MBA02M03	SBS01M03
	5	Brake	HDV130E130H25305JE1	MV61-012006AA1	MBA02M03	SBS01M03
	6	General	HDV130E150H25300JE1	MV61-012006AA1	MBA02M03	SBS01M03
	6	Brake	HDV130E150H25305JE1	MV61-012006AA1	MBA02M03	SBS01M03
	10	General	HDV130E150H15200JE1	MV61-012006AA1	MBA02M03	SBS01M03
	10	Brake	HDV130E150H15205JE1	MV61-012006AA1	MBA02M03	SBS01M03
	7.7	General	HDV130E200H25300JE1	MV61-022012AA2	MBA03M03	SBS02M03
	7.7	Brake	HDV130E200H25305JE1	MV61-022012AA2	MBA03M03	SBS02M03
	7.7	General	HDV130U200H25300JE1	MV61-024007AA2	MBA02M03	SBS02M03
	7.7	Brake	HDV130U200H25305JE1	MV61-024007AA2	MBA02M03	SBS02M03
	10	General	HDV130E260H25300JE1	MV61-022012AA2	MBA03M03	SBS02M03
	10	Brake	HDV130E260H25305JE1	MV61-022012AA2	MBA03M03	SBS02M03
	10	General	HDV130U260H25300JE1	MV61-024007AA2	MBA02M03	SBS02M03
	10	Brake	HDV130U260H25305JE1	MV61-024007AA2	MBA02M03	SBS02M03
180	15	General	HDV130E230H15200JE1	MV61-022012AA2	MBA03M03	SBS02M03
	15	Brake	HDV130E230H15205JE1	MV61-022012AA2	MBA03M03	SBS02M03
	15	General	HDV130U230H15200JE1	MV61-024007AA2	MBA02M03	SBS02M03
	15	Brake	HDV130U230H15205JE1	MV61-024007AA2	MBA02M03	SBS02M03
	19	General	HDV180U300H15200JE1	MV61-024012AA2	MBA03E03	SBS02M03
	19	Brake	HDV180U300H15205JE1	MV61-024012AA2	MBA03E03	SBS02M03
	21.5	General	HDV180U450H20250JE1	MV61-024012AA2	MBA03E03	SBS02M03
	21.5	Brake	HDV180U450H20255JE1	MV61-024012AA2	MBA03E03	SBS02M03
	27	General	HDV180U290H10150JE1	MV61-024012AA2	MBA03E03	SBS02M03
	27	Brake	HDV180U290H10155JE1	MV61-024012AA2	MBA03E03	SBS02M03
	27	General	HDV180U430H15200JE1	MV61-024012AA2	MBA03E03	SBS02M03
	27	Brake	HDV180U430H15205JE1	MV61-024012AA2	MBA03E03	SBS02M03
180	35	General	HDV180U370H10150JE1	MV61-024012AA2	MBA03E03	SBS02M03
	35	Brake	HDV180U370H10155JE1	MV61-024012AA2	MBA03E03	SBS02M03
	35	General	HDV180U550H15200JE1	MV61-034016AA2	MBA04E03	SBS02M03
	35	Brake	HDV180U550H15205JE1	MV61-034016AA2	MBA04E03	SBS02M03
	48	General	HDV180U750H15200JE1	MV61-034020AA2	MBA04E03	SBS02M03
	48	Brake	HDV180U750H15205JE1	MV61-034020AA2	MBA04E03	SBS02M03

Flange	Torque (N.m)	Type	Servo Motor Model (23-Bit Absolute Encoder)	Drive Model (Bus-Type)	Power Cable	Encoder Cable
60	0.64	General	HDV60E020H30600JA1	MV62-012003AA2	MBA01P03	SBS02P03
	0.64	Brake	HDV60E020H30605JA1	MV62-012003AA2	MBA01P03	SBS02P03
	1.27	General	HDV60E040H30600JA1	MV62-012003AA2	MBA01P03	SBS02P03
	1.27	Brake	HDV60E040H30605JA1	MV62-012003AA2	MBA01P03	SBS02P03
80	2.4	General	HDV80E075H30600JA1	MV62-012006AA2	MBA02P03	SBS02P03
	2.4	Brake	HDV80E075H30605JA1	MV62-012006AA2	MBA02P03	SBS02P03
	3.3	General	HDV80E100H30600JA1	MV62-012006AA2	MBA02P03	SBS02P03
	3.3	Brake	HDV80E100H30605JA1	MV62-012006AA2	MBA02P03	SBS02P03
110	5	General	HDV110E150H30350JA1	MV62-012006AA2	MBA02M03	SBS02M03
	5	Brake	HDV110E150H30355JA1	MV62-012006AA2	MBA02M03	SBS02M03
	6	General	HDV110E180H30400JA1	MV62-012006AA2	MBA02M03	SBS02M03
	6	Brake	HDV110E180H30405JA1	MV62-012006AA2	MBA02M03	SBS02M03
130	4	General	HDV130E100H25300JA1	MV62-012006AA2	MBA02M03	SBS02M03
	4	Brake	HDV130E100H25305JA1	MV62-012006AA2	MBA02M03	SBS02M03
	5	General	HDV130E130H25300JA1	MV62-012006AA2	MBA02M03	SBS02M03
	5	Brake	HDV130E130H25305JA1	MV62-012006AA2	MBA02M03	SBS02M03
	6	General	HDV130E150H25300JA1	MV62-012006AA2	MBA02M03	SBS02M03
	6	Brake	HDV130E150H25305JA1	MV62-012006AA2	MBA02M03	SBS02M03
	10	General	HDV130E150H15200JA1	MV62-012006AA2	MBA02M03	SBS02M03
	10	Brake	HDV130E150H15205JA1	MV62-012006AA2	MBA02M03	SBS02M03
	7.7	General	HDV130E200H25300JA1	MV62-022012AA2	MBA03M03	SBS02M03
	7.7	Brake	HDV130E200H25305JA1	MV62-022012AA2	MBA03M03	SBS02M03
	7.7	General	HDV130U200H25300JA1	MV62-024007AA2	MBA02M03	SBS02M03
	7.7	Brake	HDV130U200H25305JA1	MV62-024007AA2	MBA02M03	SBS02M03
	10	General	HDV130E260H25300JA1	MV62-022012AA2	MBA03M03	SBS02M03
	10	Brake	HDV130E260H25305JA1	MV62-022012AA2	MBA03M03	SBS02M03
	10	General	HDV130U260H25300JA1	MV62-024007AA2	MBA02M03	SBS02M03
	10	Brake	HDV130U260H25305JA1	MV62-024007AA2	MBA02M03	SBS02M03
180	15	General	HDV130E230H15200JA1	MV62-022012AA2	MBA03M03	SBS02M03
	15	Brake	HDV130E230H15205JA1	MV62-022012AA2	MBA03M03	SBS02M03
	15	General	HDV130U230H15200JA1	MV62-024007AA2	MBA02M03	SBS02M03
	15	Brake	HDV130U230H15205JA1	MV62-024007AA2	MBA02M03	SBS02M03
	19	General	HDV180U300H15200JA1	MV62-024012AA2	MBA03E03	SBS02M03
	19	Brake	HDV180U300H15205JA1	MV62-024012AA2	MBA03E03	SBS02M03
	21.5	General	HDV180U450H20250JA1	MV62-024012AA2	MBA03E03	SBS02M03
	21.5	Brake	HDV180U450H20255JA1	MV62-024012AA2	MBA03E03	SBS02M03
	27	General	HDV180U290H10150JA1	MV62-024012AA2	MBA03E03	SBS02M03
	27	Brake	HDV180U290H10155JA1	MV62-024012AA2	MBA03E03	SBS02M03
	27	General	HDV180U430H15200JA1	MV62-024012AA2	MBA03E03	SBS02M03
	27	Brake	HDV180U430H15205JA1	MV62-024012AA2	MBA03E03	SBS02M03
180	35	General	HDV180U370H10150JA1	MV62-024012AA2	MBA03E03	SBS02M03
	35	Brake	HDV180U370H10155JA1	MV62-024012AA2	MBA03E03	SBS02M03
	35	General	HDV180U550H15200JA1	MV62-034016AA2	MBA04E03	SBS02M03
	35	Brake	HDV180U550H15205JA1	MV62-034016AA2	MBA04E03	SBS02M03
	48	General	HDV180U750H15200JA1	MV62-034020AA2	MBA04E03	SBS02M03
	48	Brake	HDV180U750H15205JA1	MV62-034020AA2	MBA04E03	SBS02M03

Note: Encoder A — 23-bit absolute encoder Encoder E — 17-bit magnetic encoder

Available cable lengths: 3 m, 5 m, 10 m, 15 m, 20 m, and 25 m. For cables of other lengths, please make them as needed.

The encoder cables listed in the Model Selection Table don't include batteries. For the model of an encoder cable with battery, please change "S" (the 3rd letter in the encoder cable model) to "B".