

SANMOTION

2-PHASE STEPPING SYSTEMS

F2

42 mm sq. 2-Phase Stepping Motors

DC input



Flange size : 42mm

Motor length : 33mm, 39mm, 48mm, 59.5mm

Unipolar winding / Bipolar winding

Single shaft / Dual shaft

Shortens positioning time

Holding torque* has been increased approximately by 10% compared with our current model.**
This enables precise positioning and thereby shortens positioning time as well.

Reduced noise

These motors have noise levels approximately 3 dB(A) lower than the current model.**

Energy-saving

Motor efficiency has been improved by 2.4% compared with the current model.**
This contributes to reducing power consumption of devices and the motors' heat dissipation.

*The maximum amount of torque generated when a stepping motor is excited by its rated current.

** A comparison between our current model 103H5208-0440 and new model SF2422-12U41.



SANYO DENKI

Lineup

Model number		winding	Flange size xMotor length [mm]	Holding torque at 2-phase excitation [N·m]	Rated current [A/phase]	Mass [kg]
Single shaft	Dual shaft					
SF2421-12U41	SF2421-12U11	Unipolar	42×33	0.22	1.2	0.23
SF2422-12U41	SF2422-12U11		42×39	0.33	1.2	0.3
SF2423-12U41	SF2423-12U11		42×48	0.4	1.2	0.38
SF2424-12U41	SF2424-12U11		42×59.5	0.58	1.2	0.51
SF2421-10B41	SF2421-10B11	Bipolar	42×33	0.29	1	0.23
SF2422-10B41	SF2422-10B11		42×39	0.43	1	0.3
SF2423-10B41	SF2423-10B11		42×48	0.56	1	0.38
SF2424-10B41	SF2424-10B11		42×59.5	0.8	1	0.51

Compatible drivers (Source voltage: 24 VDC / 36 VDC)

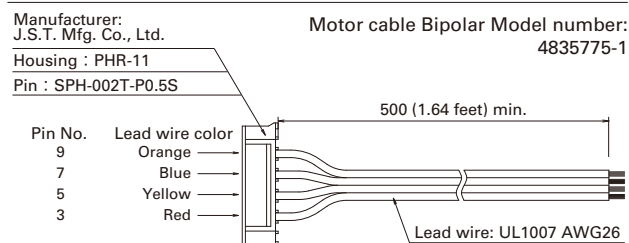
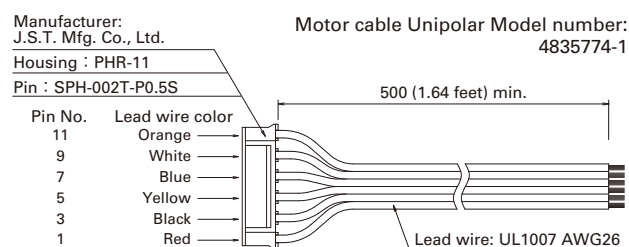
Motor	winding	Driver number
SF242□-12U□1	Unipolar	US1D200P10
SF242□-10B□1	Bipolar	BS1D200P10

See SANMOTION F2 catalog for specifications

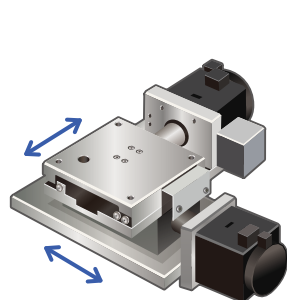
Motor cable

Motor	winding	Motor number
SF242□-12U□1	Unipolar	4835774-1
SF242□-10B□1	Bipolar	4835775-1

Motor cable: Dimensions



Application examples



XY stages



semiconductor manufacturing equipment



medical devices



Monitoring cameras

Precautions For Adoption

Cautions

Failure to follow the precautions on the right may cause moderate injury and property damage, or in some circumstances, could lead to a serious accident. Always follow all listed precautions.

Cautions

- Read the accompanying Instruction Manual carefully prior to using the product.
- If applying to medical devices and other equipment affecting people's lives, please contact us beforehand and take appropriate safety measures.
- If applying to equipment that can have significant effects on society and the general public, please contact us beforehand.
- Do not use this product in an environment where vibration is present, such as in a moving vehicle or shipping vessel.
- Do not perform any retrofitting, re-engineering, or modification to this equipment.
- The products presented in this catalog are meant to be used for general industrial applications. If using for special applications related to aviation and space, nuclear power, electric power, submarine repeaters, etc., please contact us beforehand.

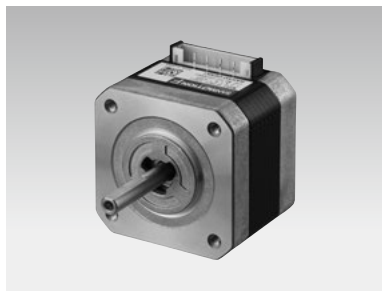
*For any question or inquiry regarding the above, contact our Sales Department.

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<http://www.sanyodenki.com>

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CATALOG No.S1047B001 '18.5



42 mm sq.

1.8°/step **RoHS**

Unipolar winding, Connector type

Bipolar winding, Connector type ▶ p. 46

Customizing

Shaft length Shaft shape

Varies depending on the model number and quantity. Contact us for details.

Unipolar winding, Connector type

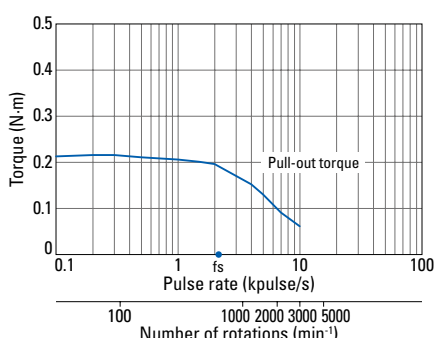
Model no.		Holding torque at 2-phase energization	Rated current	Wiring resistance	Winding inductance	Rotor inertia	Mass	Motor length (L)
Single shaft	Dual shaft	N·m min.	A/phase	Ω/phase	mH/phase	×10 ⁻⁴ kg·m ²	kg	mm
SF2421-12U41	SF2421-12U11	0.22	1.2	2.4	2.4	0.031	0.23	33±0.5
SF2422-12U41	SF2422-12U11	0.33	1.2	3	3.3	0.046	0.3	39±0.5
SF2423-12U41	SF2423-12U11	0.4	1.2	3.4	3.9	0.063	0.38	48±0.5
SF2424-12U41	SF2424-12U11	0.58	1.2	4.4	5.4	0.094	0.51	59.5±1

Motor cable: model no. 4835710-1

Characteristics diagram

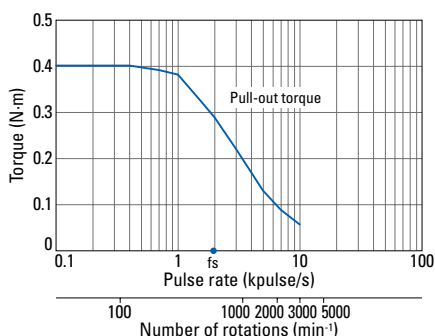
SF2421-12U41
SF2421-12U11

Constant current circuit
Source voltage: 24 VDC
Operating current:
1.2 A/phase, 2-phase
energization (full-step)
Pull-out torque:
 $J_L = 0.94 \times 10^{-4} \text{ kg} \cdot \text{m}^2$ (use the
rubber coupling)
fs: Maximum self-start
frequency when not
loaded



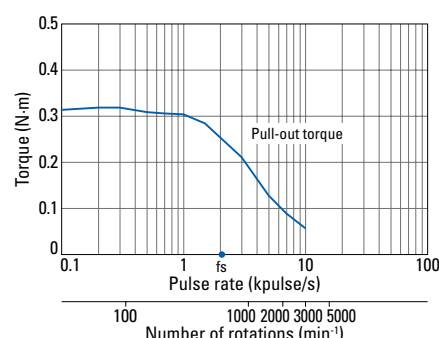
SF2423-12U41
SF2423-12U11

Constant current circuit
Source voltage: 24 VDC
Operating current:
1.2 A/phase, 2-phase
energization (full-step)
Pull-out torque:
 $J_L = 0.94 \times 10^{-4} \text{ kg} \cdot \text{m}^2$ (use the
rubber coupling)
fs: Maximum self-start
frequency when not
loaded



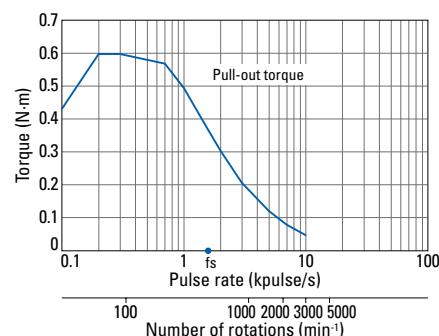
SF2422-12U41
SF2422-12U11

Constant current circuit
Source voltage: 24 VDC
Operating current:
1.2 A/phase, 2-phase
energization (full-step)
Pull-out torque:
 $J_L = 0.94 \times 10^{-4} \text{ kg} \cdot \text{m}^2$ (use the
rubber coupling)
fs: Maximum self-start
frequency when not
loaded

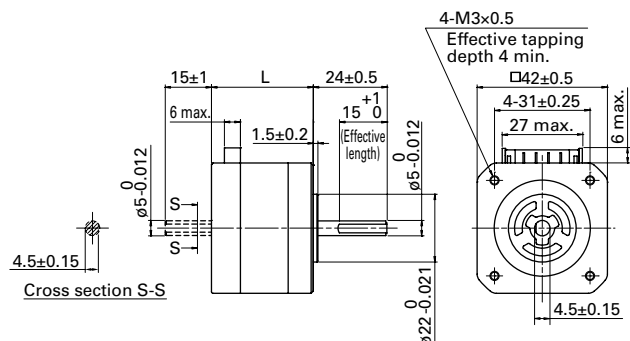


SF2424-12U41
SF2424-12U11

Constant current circuit
Source voltage: 24 VDC
Operating current:
1.2 A/phase, 2-phase
energization (full-step)
Pull-out torque:
 $J_L = 0.94 \times 10^{-4} \text{ kg} \cdot \text{m}^2$ (use the
rubber coupling)
fs: Maximum self-start
frequency when not
loaded



Dimensions (Unit: mm)



Option (sold separately): Motor cable model no. 4835774-1

Manufacturer: J.S.T.
Housing: PHR-11
Pin: SPH-002T-P0.5S

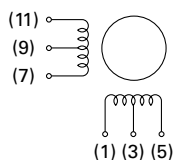
Pin no. 11 Orange
9 White
7 Blue
5 Yellow
3 Black
1 Red

Lead wire: UL 1007 AWG26

1000 mm

This motor cable is for model no. SF242□-12U□1.

Internal wiring () connector pin number

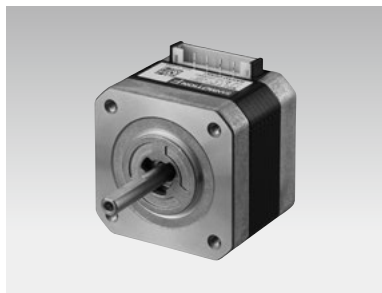


Compatible drivers

Model no.: US1D200P10

Operating current select switch setting: 8

The characteristics diagram shown above is from our experimental circuit.



42 mm sq.

1.8°/step **RoHS**

Bipolar winding, Connector type

Unipolar winding, Connector type ▶ p. 45

Customizing

[Shaft length](#) [Shaft shape](#)

Varies depending on the model number and quantity. Contact us for details.

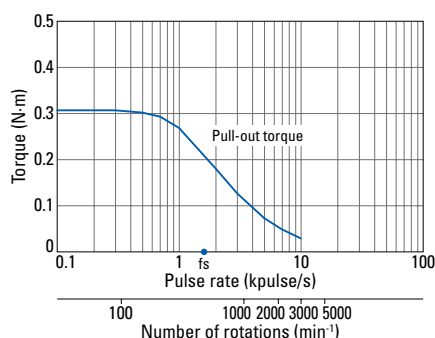
Bipolar winding, Connector type

Model no.		Holding torque at 2-phase energization	Rated current	Wiring resistance	Winding inductance	Rotor inertia	Mass	Motor length (L)
Single shaft	Dual shaft	N·m min.	A/phase	Ω/phase	mH/phase	$\times 10^{-4} \text{kg} \cdot \text{m}^2$	kg	mm
SF2421-10B41	SF2421-10B11	0.29	1	3.6	7	0.031	0.23	33±0.5
SF2422-10B41	SF2422-10B11	0.43	1	4.6	9.6	0.046	0.3	39±0.5
SF2423-10B41	SF2423-10B11	0.56	1	5.3	12.5	0.063	0.38	48±0.5
SF2424-10B41	SF2424-10B11	0.8	1	6.5	16	0.094	0.51	59.5±1

Characteristics diagram

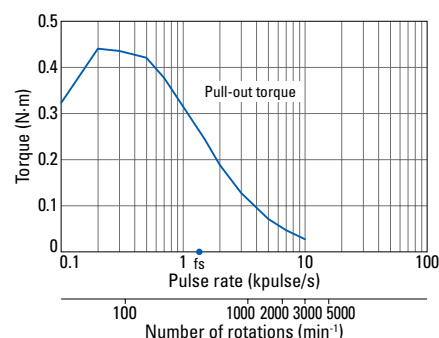
SF2421-10B41 SF2421-10B11

Constant current circuit
Source voltage: 24 VDC
Operating current:
1 A/phase, 2-phase
energization (full-step)
Pull-out torque:
 $J_L = 0.94 \times 10^{-4} \text{kg} \cdot \text{m}^2$ (use the
rubber coupling)
fs: Maximum self-start
frequency when not
loaded



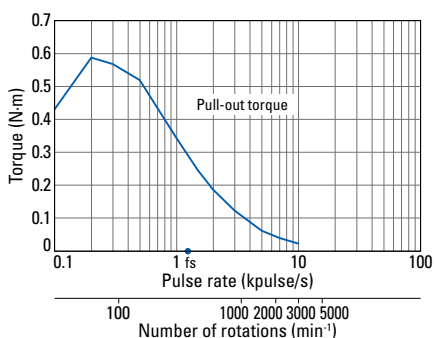
SF2422-10B41 SF2422-10B11

Constant current circuit
Source voltage: 24 VDC
Operating current:
1 A/phase, 2-phase
energization (full-step)
Pull-out torque:
 $J_L = 0.94 \times 10^{-4} \text{kg} \cdot \text{m}^2$ (use the
rubber coupling)
fs: Maximum self-start
frequency when not
loaded



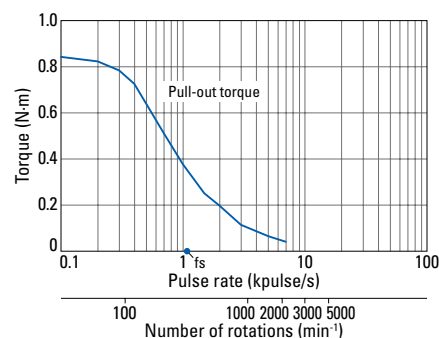
SF2423-10B41 SF2423-10B11

Constant current circuit
Source voltage: 24 VDC
Operating current:
1 A/phase, 2-phase
energization (full-step)
Pull-out torque:
 $J_L = 0.94 \times 10^{-4} \text{kg} \cdot \text{m}^2$ (use the
rubber coupling)
fs: Maximum self-start
frequency when not
loaded



SF2424-10B41 SF2424-10B11

Constant current circuit
Source voltage: 24 VDC
Operating current:
1 A/phase, 2-phase
energization (full-step)
Pull-out torque:
 $J_L = 2.6 \times 10^{-4} \text{kg} \cdot \text{m}^2$ (use the
rubber coupling)
fs: Maximum self-start
frequency when not
loaded



DC Input Set Models/ Drivers



IP65 Splash and Dust Proof Stepping Motors



Synchronous Motors

Pin: SPH-002T-P0.5S

This motor cable is for model no. SF242□-10B□1.

Operating current select switch setting: A

Allowable Load▶p. 71 Rotation Direction▶p. 72 General Specifications▶p. 73

Data is measured under the trial conditions of SANYO DENKI. Driving torque may vary according to actual machine precision.