

Speed Control Motor and Controller Package DSC Series

<Additional Information>

- Technical reference → Page H-1
- Regulations & Standards → Page I-2

Standard Type
Parallel Shaft/
Round Shaft

Electromagnetic
Brake Type
Parallel Shaft



● For detailed information about regulations and standards, please see the Oriental Motor website.



- A high-reliability closed loop control speed control package.
- High performance, with easy installation and simple data setting. The display and digital setting features are built-in, making it even easier to use.
- An entry level speed control package that is both reasonably priced and compact.
- The electromagnetic brake type can be operated vertically.

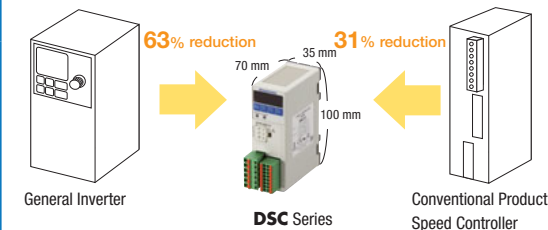
The **DSC** Series features are AC motors and speed controllers that utilize Oriental Motor's exclusive technology. They provide high reliability with closed loop control, and because the phase control circuit has been digitized, the size of the speed controller has been reduced.

Features

Easy Setting, More Control, Less Space

● Compact

The volume is 63% smaller than a general inverter.



● Side-by-Side Installation Saves Space

The body width is 35 mm, and even when using multiple speed controllers, the installation is compact because they can be installed side by side.



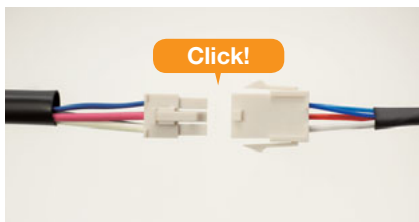
● Slim Body Control Box

Depth is 90 mm. Can be installed in slim body control cabinets.



● Connecting the Motor and Driver is Easy Using a Connector

Wiring the speed controller and motor together uses a connector, so installation and removal are easy.



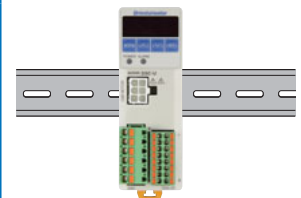
● Screwless I/O Wiring Requires No Crimping or Screwing

No need for soldering or crimping tools, and no torque management for screws necessary. Reduces wiring time and maintenance.



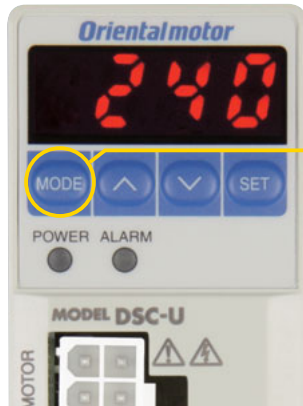
● Easy DIN Rail Installation

The speed controller can be installed directly on the DIN rail.



Simple User Interface

● Speed and Other Settings are Shown and can be Entered Directly



Monitoring Mode

Real-time monitor for speed (Motor, gear shaft, conveyor speed), alarms, warnings, I/O status monitor

Data Mode

Speed setting

Parameter Mode

Set I/O assignments and parameters

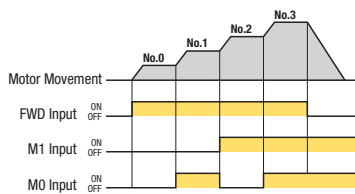
Test Mode

Test operation without data setting is possible.

● An operation lock can prevent accidental operation.

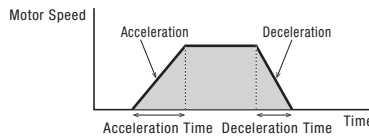
● Speed Control (4 speeds)

4 units of operating data can be set, and can be switched with I/O during operation.



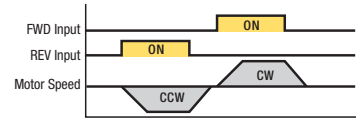
● Acceleration/Deceleration

Makes the motor movement at start/stop smoother. It is possible to set acceleration/deceleration differently for each of the 4-speed data units.



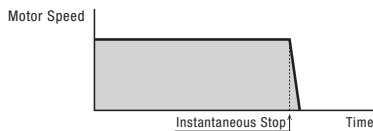
● Bi-Directional Operation

Performs the operation according to the command for rotation direction.



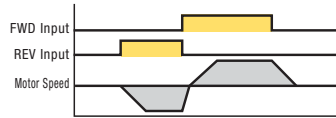
● Instantaneous Stop

Stops the operating motor instantaneously. (Short cycle run/stop conditions can be created)



● Instantaneous Bi-Directional Operation

Instantaneously switches the rotation direction of the motor while operating. (Short cycle change conditions can be created)

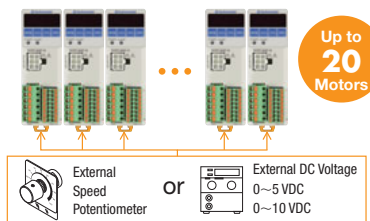


● External Speed Setting Input is Possible

- (1) Setting using operation key
- (2) External speed potentiometer
Included or accessory
- (3) External DC voltage
0~5 VDC or 0~10 VDC

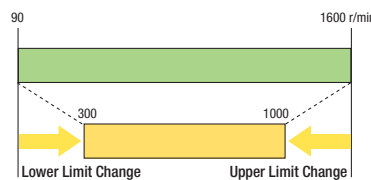
● Parallel-Motor Operation (20 Units Max.)

A single external speed potentiometer can operate a maximum of 20 units in parallel. Fine adjustment of each motor's speed can be performed by changing the controller's parameters.



● Speed Range Control

It is possible to limit the speed setting in advance with the speed range.



Overview, Product Series

Brushless Motors

AC Input BMU

AC Input BLE2

AC Input BXII

DC Input BLH

AC Speed Control Motors

DSC

US2

Accessories

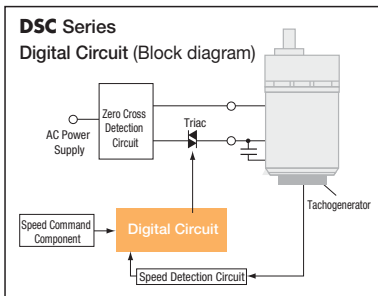
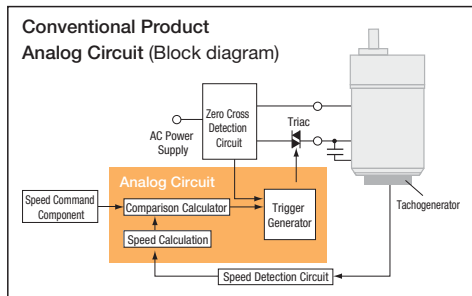
Installation

Speed Control Using Closed Loop Control

Speed is always monitored by the tachogenerator built into the AC motor. The actual speed is controlled to match the speed setting, even when the load fluctuates.

Standard Type
Parallel Shaft/
Round Shaft

Electromagnetic
Brake Type
Parallel Shaft



● Speed regulation $\pm 1\%$ (Reference value)

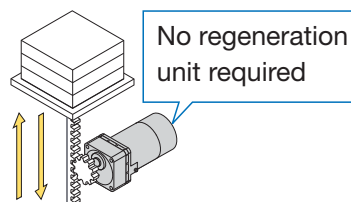
Digitalization of Circuits

Most of the analog circuits that were used in the past have been replaced with software, which is now run by the CPU, and circuit components have been vastly reduced. This has drastically reduced the size as well as the number of circuit components. In addition, due to this switch to digital processing, it is possible to make the deviation for the speed command and speed detection values almost 0, and speed regulation has been improved from -5% to $\pm 1\%*$.
*0~permissible torque when at 1000 r/min

Vertical Operation is Possible with Electromagnetic Brake Type

Speed control in vertical operation is possible through deceleration control. (For details on deceleration control and driving conditions while using deceleration control, refer to page D-126.)

Speed Control Range
50 Hz:
300~1400 r/min
60 Hz:
300~1600 r/min

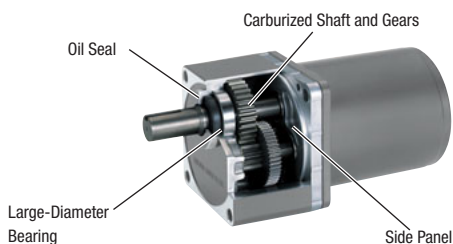


Use of a High Permissible Torque, High Strength Gearhead

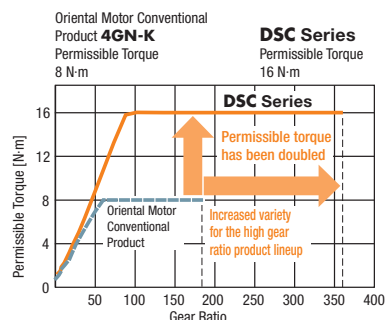
Utilizes a gearhead that excels in both permissible torque and strength. Special side panels in the gearhead have increased case rigidity, and heat processing (carburization) has increased the strength of the gears.

Parallel Shaft Combination Type

Internal Gearhead Structure

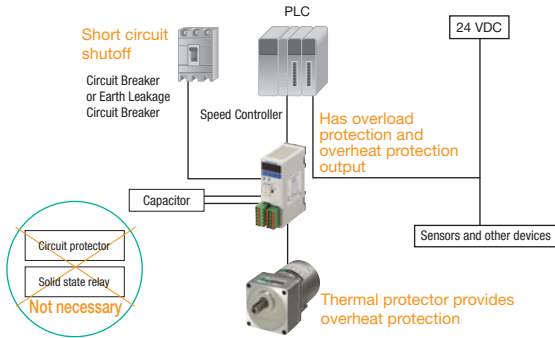


For Geared Type with 80 mm Frame Size



High Reliability

● Low Noise Gives Peace of Mind, and System Configuration is Simple



Inverter + Three-Phase Motor

PWM control

Lots of noise

Controls the voltage and frequency
1 cycle performs 300 switchings

Conditions ● Carrier frequency: 15 kHz
● Setting frequency: 50 Hz

DSC Series

Phase control

Little noise

Controls the voltage
1 cycle performs 2 switchings

Conditions ● Power supply frequency: 50 Hz

● Alarm Output Increases Reliability

Thanks to the closed loop control, feedback on the motor status is provided to the controller in real-time. An alarm signal is output when an abnormality, such as motor lock due to overload, occurs and the supply of power to the motor is stopped.

Alarm Details

- Motor Overheat
- Motor Lock
- Overspeed
- EEPROM (Saved data error)
- Operation Stop During Initialization
- External Stop

Saves a History of up to 9 Alarms

Product Line

The motor, gearhead, speed controller, connection cable (product without connection cable is also selectable) and external speed potentiometer are delivered as one package.

List price: From €151.00 (6 W, round shaft type, connection cable and external speed potentiometer not included)

Package						
Motor	Output Power	Max. Permissible Torque	Speed Controller	Power Supply Voltage	Included*	Package Price Range
Standard Type Parallel Shaft Combination Type → Page D-113	6 W 15 W 25 W 40 W 60 W 90 W	40 N·m		Single-Phase 220/230 VAC	Connection Cable 1 m, 2 m, 3 m or not included	€195.00 ~ €345.00
Standard Type Round Shaft Type → Page D-114		0.73 N·m			1 m, 2 m, 3 m or not included	€151.00 ~ €229.00
Electromagnetic Brake Type Parallel Shaft Combination Type → Page D-125		40 N·m			1 m, 2 m, 3 m or not included	€255.00 ~ €444.00

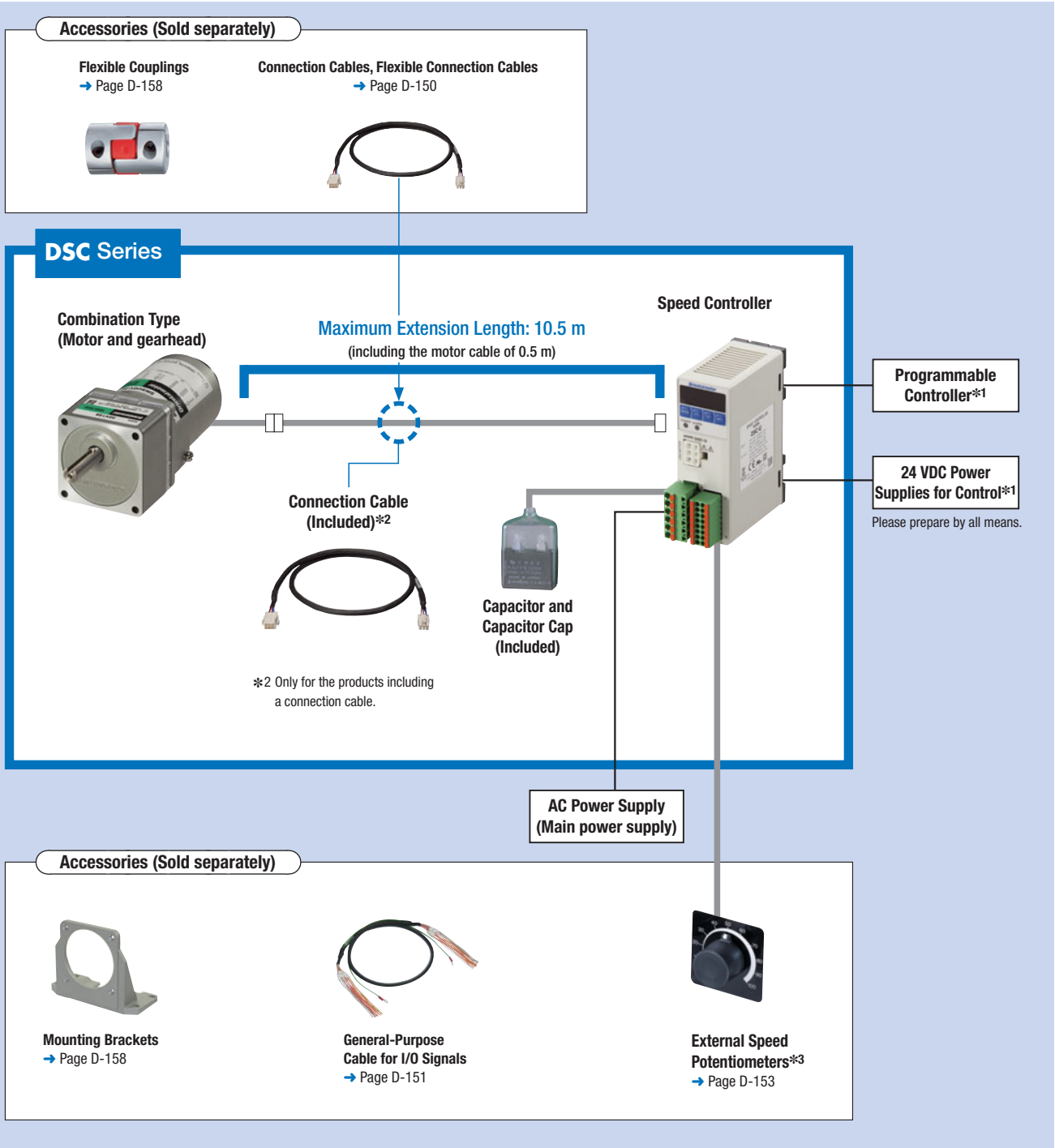
* Products including an external speed potentiometer are also available.

System Configuration

Parallel Shaft Combination Type

Standard Type
Parallel Shaft/
Round Shaft

Electromagnetic
Brake Type
Parallel Shaft



*1 Not supplied.

*3 Products including an external speed potentiometer are also available.

Example of System Configuration

DSC Series	Sold Separately		
	Connection Cable (5 m)	Mounting Bracket	Flexible Coupling
DSCI425EC-25-3 €235.00	CC055C €51.00	SOL4M6F €23.00	MCL401515 €55.00

● The system configuration shown above is an example. Other combinations are also available.

Standard Type

Parallel Shaft Combination Type

Round Shaft Type



Parallel Shaft Combination Type

Overview,
Product
Series

Brushless
Motors

AC Input
BMU

AC Input
BLE2

AC Input
BXII

DC Input
BLH

AC Speed
Control
Motors

DSC

US2

Accessories

Installation

Product Line

Combination
Type

Motor and gearhead are delivered pre-assembled.

The combination of motors and gearheads can be changed, and they are also available separately. In addition, the gearhead can be removed and the assembly position can be changed in 90° increments.

- Connection cable included: The list price is including a motor, a gearhead, a speed controller and a connection cable (1 m, 2 m or 3 m).
- Connection cable not included: The list price is including a motor, a gearhead and a speed controller.
- For products that include an external speed potentiometer, €7.00 will be added to the price.

For the single-phase 100 VAC, 200 VAC or 110/115 VAC models, please contact the nearest Oriental Motor sales office.

Parallel Shaft Combination Type

Output Power	Power Supply Voltage	Product Name	Gear Ratio	List Price	
				Connection Cable Included	Connection Cable Not Included
6 W	Single-phase 220/230 VAC	DSCI26EC-□■	5, 6, 7.5, 9, 12.5, 15, 18	€214.00	€195.00
			25, 30, 36	€219.00	€200.00
			50, 60, 75, 90, 100, 120, 150, 180	€224.00	€205.00
			250, 300, 360	€259.00	€240.00
15 W	Single-phase 220/230 VAC	DSCI315EC-□■	5, 6, 7.5, 9, 12.5, 15, 18	€223.00	€204.00
			25, 30, 36	€227.00	€208.00
			50, 60, 75, 90, 100, 120, 150, 180	€233.00	€214.00
			250, 300, 360	€267.00	€248.00
25 W	Single-phase 220/230 VAC	DSCI425EC-□■	5, 6, 7.5, 9, 12.5, 15, 18	€231.00	€212.00
			25, 30, 36	€235.00	€216.00
			50, 60, 75, 90, 100, 120, 150, 180	€241.00	€222.00
			250, 300, 360	€277.00	€258.00
40 W	Single-phase 220/230 VAC	DSCI540EC-□■	5, 6, 7.5, 9, 12.5, 15, 18	€253.00	€234.00
			25, 30, 36	€258.00	€239.00
			50, 60, 75, 90, 100, 120, 150, 180	€263.00	€244.00
			250, 300	€324.00	€305.00
60 W	Single-phase 220/230 VAC	DSCI560EC-□■	5, 6, 7.5, 9, 12.5, 15, 18	€295.00	€276.00
			25, 30, 36, 50, 60, 75, 90, 100	€304.00	€285.00
			120, 150, 180	€312.00	€293.00
			250, 300	€338.00	€319.00
90 W	Single-phase 220/230 VAC	DSCI590EC-□■	5, 6, 7.5, 9, 12.5, 15, 18	€309.00	€290.00
			25, 30, 36, 50, 60	€325.00	€306.00
			75, 90, 100, 120, 150, 180	€332.00	€313.00

The following items are included with each product.

Motor, Gearhead, Speed Controller, Capacitor, Capacitor Cap, Installation Screws, Parallel Key, Connection Cable*1, External Speed Potentiometer*2, Operating Manual

*1 Only for the products including a connection cable.

*2 Only for the products including an external speed potentiometer.

- A number indicating the gear ratio is entered where the box □ is located within the product name.

When the accessory connection cable is supplied, a number indicating the cable -1 (1 m), -2 (2 m), -3 (3 m), is specified in the box ■ in the product name.

When the accessory external speed potentiometer is supplied, V is specified at the end of the product name.

● Round Shaft Type

Output Power	Power Supply Voltage	Product Name	List Price	
			Connection Cable Included	Connection Cable Not Included
6 W	Single-Phase 220/230 VAC	DSCI26EC-A ■	€170.00	€151.00
15 W	Single-Phase 220/230 VAC	DSCI315EC-A ■	€175.00	€156.00
25 W	Single-Phase 220/230 VAC	DSCI425EC-A ■	€182.00	€163.00
40 W	Single-Phase 220/230 VAC	DSCI540EC-A ■	€195.00	€176.00
60 W	Single-Phase 220/230 VAC	DSCI560EC-A ■	€209.00	€190.00
90 W	Single-Phase 220/230 VAC	DSCI590EC-A ■	€222.00	€203.00

Standard Type
Parallel Shaft/
Round Shaft

Electromagnetic
Brake Type
Parallel Shaft

The following items are included with each product.

Motor, Speed Controller, Capacitor, Capacitor Cap, Connection Cable*1, External Speed Potentiometer*2, Operating Manual

*1 Only for the products including a connection cable.

*2 Only for the products including an external speed potentiometer.

- When the accessory connection cable is supplied, a number indicating the cable **-1** (1 m), **-2** (2 m), **-3** (3 m), is specified in the box ■ in the product name.
When the accessory external speed potentiometer is supplied, **V** is specified at the end of the product name.

■ Product Number

DSC I 4 25 EC - 50 -1 V

- ① ② ③ ④ ⑤ ⑥ ⑦ ⑧

①	Series Name	DSC: DSC Series
②	Motor Type	I: Induction Motor
③	Motor Frame Size	2: 60 mm 3: 70 mm 4: 80 mm 5: 90 mm
④	Output Power (W)	(Example) 25: 25 W
⑤	Power Supply Voltage	EC: Single-phase 220/230 VAC
⑥	Gear Ratio and Shaft Type	Number: Gear Ratio for Combination Types A: Round Shaft Type
⑦	Connection Cable (Included)	Number: Included Connection Cable Length -1: 1 m, -2: 2 m, -3: 3 m None: Connection cable not included
⑧	External Speed Potentiometer (Included)	V: Included External Speed Potentiometer None: External speed potentiometer not included

- Examples of product names that indicate connection cable availability and length
3 m connection cable included → **DSCI425EC-50-3**
Connection cable not included → **DSCI425EC-50**



Specifications – Continuous Rating

Product Name	Max. Output Power W	Voltage VAC	Frequency Hz	Variable Speed Range r/min	Permissible Torque		Starting Torque mN·m	Current A	Power Consumption W	Capacitor μF	Motor Overheat Protection Device		
					1200 r/min (50 Hz)	90 r/min							
					1450 r/min (60 Hz)	mN·m							
DSCI26EC -□■	6	Single-Phase 220	50	90~1400	42	40	44	0.135	29	0.6	ZP		
			60	90~1600	46								
			Single-Phase 230	50	90~1400	46	37					44	
				60	90~1600	50	39					50	
DSCI315EC -□■	15	Single-Phase 220	50	90~1400	125	40	67	0.23	43	1.0	TP		
			60	90~1600	110		72		46				
		Single-Phase 230	50	90~1400	125				81			44	
			60	90~1600	120		47						
DSCI425EC -□■	25	Single-Phase 220	50	90~1400	205	40	110	0.37	70	1.5	TP		
			60	90~1600									
		Single-Phase 230	50	90~1400			120						
			60	90~1600									
DSCI540EC -□■	40	Single-Phase 220	50	90~1400	320	65	190	0.55	96	2.3	TP		
			60	90~1600								70	104
		Single-Phase 230	50	90~1400									
			60	90~1600								70	105
DSCI560EC -□■	60	Single-Phase 220	50	90~1400	490	80	280	0.71	129	3.0	TP		
			60	90~1600								75	143
		Single-Phase 230	50	90~1400									
			60	90~1600								80	144
DSCI590EC -□■	90	Single-Phase 220	50	90~1400	730	95	490	1.2	201	6.0	TP		
			60	90~1600								500	226
		Single-Phase 230	50	90~1400									
			60	90~1600								530	228

● The values in the table are characteristics for the motor only. The variable speed ranges shown are under no load conditions.

ZP: This indicates that it is impedance protected.

TP: This indicates that there is a built-in thermal protector (automatic return type).

● With the combination types, a number indicating the gear ratio is entered where the box □ is located within the product name. With the round shaft types, **A** is entered.

When the accessory connection cable is supplied, a number indicating the cable -**1** (1 m), -**2** (2 m), -**3** (3 m), is specified in the box ■ in the product name.

When the accessory external speed potentiometer is supplied, **V** is specified at the end of the product name.

Common Specifications

Item	Specifications
Speed Setting Methods	Select one of the following setting methods. · Setting via control panel · A max. of 4 patterns of operating data can be set · External speed potentiometer: PAVR-20KZ (20 kΩ, 1/4 W)---Included or accessories (sold separately) · External DC voltage: 0~5 VDC, or 0~10 VDC
Acceleration Time and Deceleration Time Setting Range	0.0~15.0 second Acceleration time/deceleration time varies with the load condition of the motor.
Monitoring Mode	Speed, operating data number, alarm code, warning code, I/O monitor
Data Mode	Speed, acceleration time, deceleration time, reset
Function Parameter Mode	Gear ratio, speed increasing ratio, fixed last digit display, initial operation inhibition alarm, external speed command input, external speed command voltage selection, external speed command offset, upper and lower speed limits, input function selection, output function selection, motor lock detection time, motor rotation direction, reset
Test Mode	JOG operation
Others	Lock data editing
Control Power Supply	24 VDC±10% 0.15 A or more
Input Signal	Photocoupler Input Input resistance: 4.7 kΩ Arbitrary signal assignment to IN0~IN5 input (6 points) is possible. []: Initial setting [FWD], [REV], [MO], [M1], [ALARM-RESET], [FREE], EXT-ERROR Source Input/Sink Input---Can be switched using the selection switch: Factory setting source input
Output Signal	Photocoupler and Open-Collector Output External power supply: 4.5~30 VDC, 40 mA max. Arbitrary signal assignment to OUT0, OUT1 output (2 points) is possible. []: Initial setting [SPEED-OUT], [ALARM-OUT], TH-OUT, WNG Source Output/Sink Output---Supported through external wiring
Protective Function	When the following protective functions are activated, the motor will coast to a stop, and the ALARM output will be turned off. At the same, the alarm code will be displayed on the control panel and the ALARM LED will illuminate. Alarm Types: Motor overheat, motor lock, EEPROM error, initial operation inhibition, external stop
Maximum Extension Length	Motor and Speed Controller Distance: 10.5 m (when an accessory connection cable is used)

Overview, Product Series

Brushless Motors

AC Input BMU

AC Input BLE2

AC Input BXII

DC Input BLH

AC Speed Control Motors

DSC

US2

Accessories

Installation

General Specifications

Item	Motor	Speed Controller
Insulation Resistance	100 MΩ or more when a 500 VDC megger is applied between the windings and the case after continuous operation under normal ambient temperature and humidity.	100 MΩ or more when a 500 VDC megger is applied between the main circuit terminal and the control circuit terminal, between the main circuit terminal and the case, and between the main circuit terminal and FG after continuous operation under normal ambient temperature and humidity.
Dielectric Strength	Sufficient to withstand 1.5 kVAC at 50 Hz or 60 Hz applied between the windings and the case for 1 minute after continuous operation under normal ambient temperature and humidity.	Sufficient to withstand 1.9 kVAC at 50 Hz or 60 Hz applied between the main circuit terminal and the control circuit terminal and between the main circuit terminal and the case, and 1.5 kVAC at 50 Hz or 60 Hz applied between the main circuit terminal and FG for 1 minute after continuous operation under normal ambient temperature and humidity.
Temperature Rise	A gearhead or equivalent heat sink* is connected to the motor and the winding temperature rise is measured at 80°C or less using the resistance change method after continuous operation with no load under normal ambient temperature and humidity.	-
Overheat Protection Device	The 6 W type is impedance protected. All other motors have a built-in thermal protector (Automatic return type).	-
Operating Environment	Ambient Temperature	-10~+40°C (non-freezing)
	Ambient Humidity	85% or less (Non-condensing)
	Altitude	Max. of 1000 m above sea level
Thermal Class	130 (B)	-
Degree of Protection	IP20	IP20

*Heat sink size (Material: Aluminum)

Motor Output Power	Size (mm)	Thickness (mm)
6 W	115×115	5
15 W	125×125	
25 W	135×135	
40 W	165×165	
60 W	200×200	
90 W	200×200	

Note

● Do not measure insulation resistance or perform the dielectric voltage test while the motor and speed controller are connected.

Combination Type Output Shaft Speed

● Motor Shaft Speed

Low speed: 90 r/min, High speed at 50 Hz: 1400 r/min, High speed at 60 Hz: 1600 r/min

Unit: r/min

Gear Ratio	5 6 7.5 9 12.5 15 18 25 30 36 50 60 75 90 100 120 150 180 250 300 360																				
	High Speed	280	233	186	155	112	93	77	56	46	38	28	23	18.6	15.5	14	11.6	9.3	7.7	5.6	4.6
Low Speed	18	15	12	10	7.2	6	5	3.6	3	2.5	1.8	1.5	1.2	1	0.9	0.75	0.6	0.5	0.36	0.3	0.25

Permissible Torque on Combination Types

● A colored background () indicates gear shaft rotation in the same direction as the motor shaft, while the others rotate in the opposite direction.

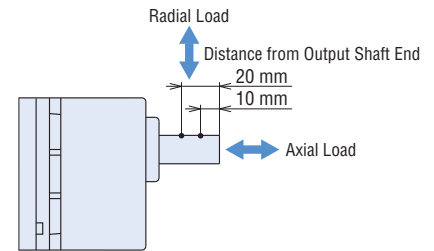
Unit: N·m

Product Name	Gear Ratio	Motor Shaft Speed r/min	5 6 7.5 9 12.5 15 18 25 30 36 50 60 75 90 100 120 150 180 250 300 360																					
			DSCI26EC	1200	220 VAC 50 Hz	0.19	0.23	0.28	0.34	0.47	0.57	0.68	0.95	1.1	1.3	1.8	2.2	2.7	3.3	3.6	4.3	5.1	6	6
230 VAC 50 Hz	0.21	0.25			0.31	0.37	0.52	0.62	0.75	1.0	1.2	1.4	2.0	2.4	3.0	3.6	4.0	4.7	5.6	6	6	6	6	
1450	220 VAC 60 Hz	0.21		0.25	0.31	0.37	0.52	0.62	0.75	1.0	1.2	1.4	2.0	2.4	3.0	3.6	4.0	4.7	5.6	6	6	6	6	
	230 VAC 60 Hz	0.23		0.27	0.34	0.41	0.56	0.68	0.81	1.1	1.3	1.5	2.2	2.6	3.2	3.9	4.3	5.2	6	6	6	6	6	
DSCI315EC	90	220 VAC 50/60 Hz	0.18	0.22	0.27	0.32	0.45	0.54	0.65	0.90	1.0	1.2	1.7	2.1	2.6	3.1	3.4	4.1	4.9	5.8	6	6	6	
		230 VAC 50 Hz	0.17	0.20	0.25	0.30	0.42	0.50	0.60	0.83	0.95	1.1	1.6	1.9	2.4	2.9	3.2	3.8	4.5	5.4	6	6	6	
		230 VAC 60 Hz	0.18	0.21	0.26	0.32	0.44	0.53	0.63	0.88	1.0	1.2	1.7	2.0	2.5	3.0	3.4	4.0	4.7	5.7	6	6	6	
DSCI425EC	1200	50 Hz	0.56	0.68	0.84	1.0	1.4	1.7	2.0	2.8	3.2	3.9	5.4	6.5	8.1	9.7	10	10	10	10	10	10	10	
		1450	220 VAC 60 Hz	0.50	0.59	0.74	0.89	1.2	1.5	1.8	2.5	2.8	3.4	4.7	5.7	7.1	8.5	9.5	10	10	10	10	10	10
			230 VAC 60 Hz	0.54	0.65	0.81	0.97	1.4	1.6	1.9	2.7	3.1	3.7	5.2	6.2	7.7	9.3	10	10	10	10	10	10	10
DSCI540EC	90	50 Hz	0.18	0.22	0.27	0.32	0.45	0.54	0.65	0.90	1.0	1.2	1.7	2.1	2.6	3.1	3.4	4.1	4.9	5.8	8.1	9.7	10	
		1200	50 Hz	0.92	1.1	1.4	1.7	2.3	2.8	3.3	4.6	5.3	6.3	8.8	10.6	13.2	15.9	16	16	16	16	16	16	16
			1450	60 Hz	0.18	0.22	0.27	0.32	0.45	0.54	0.65	0.90	1.0	1.2	1.7	2.1	2.6	3.1	3.4	4.1	4.9	5.8	8.1	9.7
DSCI560EC	1200	50 Hz	1.4	1.7	2.2	2.6	3.6	4.3	5.2	6.9	8.3	9.9	13.8	16.5	20.6	24.8	27.5	30	30	30	30	30	-	
		60 Hz	0.29	0.35	0.44	0.53	0.73	0.88	1.1	1.4	1.7	2.0	2.8	3.4	4.2	5.0	5.6	6.3	7.9	9.5	13.2	15.8	-	
	1450	50 Hz	0.32	0.38	0.47	0.57	0.79	0.95	1.1	1.5	1.8	2.2	3.0	3.6	4.5	5.4	6.0	6.8	8.5	10.2	14.2	17.0	-	
		60 Hz	2.2	2.6	3.3	4.0	5.5	6.6	7.9	10.5	12.6	15.2	21.1	25.3	30	30	30	30	30	30	30	30	-	
DSCI90EC	1200	220 VAC 50 Hz	2.1	2.5	3.1	3.7	5.2	6.2	7.5	9.9	11.9	14.2	19.8	23.7	29.7	30	30	30	30	30	30	30	-	
		230 VAC 60 Hz	2.2	2.6	3.3	4.0	5.5	6.6	7.9	10.5	12.6	15.2	21.1	25.3	30	30	30	30	30	30	30	30	-	
	1450	220 VAC 50 Hz	0.36	0.43	0.54	0.65	0.90	1.1	1.3	1.7	2.1	2.5	3.4	4.1	5.2	6.2	6.9	7.8	9.7	11.7	16.2	19.4	-	
		230 VAC 60 Hz	0.34	0.41	0.51	0.61	0.84	1.0	1.2	1.6	1.9	2.3	3.2	3.9	4.8	5.8	6.5	7.3	9.1	10.9	15.2	18.2	-	
DSCI90EC	1200	220 VAC 50 Hz	0.38	0.46	0.57	0.69	0.96	1.1	1.4	1.8	2.2	2.6	3.7	4.4	5.5	6.6	7.3	8.3	10.3	12.4	17.2	20.7	-	
		230 VAC 60 Hz	3.3	3.9	4.9	5.9	8.2	9.9	11.3	15.7	18.8	22.6	31.4	37.7	40	40	40	40	40	40	-	-	-	
	1450	60 Hz	0.43	0.51	0.64	0.77	1.1	1.3	1.5	2.0	2.5	2.9	4.1	4.9	5.8	6.9	7.7	9.2	11.5	13.9	-	-	-	

Permissible Radial Load and Permissible Axial Load

Combination Type

Product Name	Gear Ratio	Permissible Radial Load		Permissible Axial Load
		Distance from the End of the Gearhead Output Shaft		
		10 mm	20 mm	
		N	N	N
DSCI26	5~25	150	200	40
	30~360	200	300	
DSCI315	5~25	200	300	80
	30~360	300	400	
DSCI425	5~25	300	350	100
	30~360	450	550	
DSCI540 DSCI560	5~9	400	500	150
	12.5~18	450	600	
	25~300	500	700	
DSCI590	5~9	400	500	150
	12.5~18	450	600	
	25~180	500	700	



Round Shaft Type

Product Name	Permissible Radial Load		Permissible Axial Load
	Distance from the End of the Output Shaft		
	10 mm	20 mm	
	N	N	
DSCI26	50	110	Half of motor mass or less*
DSCI315	40	60	
DSCI425	90	140	
DSCI540	140	200	
DSCI560 DSCI590	240	270	

*Avoid applying axial loads as much as possible. If an axial load is unavoidable, keep it at half or less of the motor mass.

Permissible Inertia J

Unit: $\times 10^{-4}$ kg-m²

Product Name	Gear Ratio	Permissible Inertia J																				
		5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300	360
DSCI26	During Instantaneous Stop or during Bi-Directional Operation*	12	18	28	40	78	110	160	260	370	540	920	1300	1700	2000	2500	3600	5000	5000	5000	5000	5000
		1.55	2.23	3.49	5.02	9.69	14	20.1	38.8	55.8	80.4	155	155	155	155	155	155	155	155	155	155	155
DSCI315	During Instantaneous Stop or during Bi-Directional Operation*	20	28	45	65	120	180	260	440	630	900	1500	2100	2800	3200	4000	5700	8000	8000	8000	8000	8000
		3.5	5.04	7.88	11.3	21.9	31.5	45.4	87.5	126	181	350	350	350	350	350	350	350	350	350	350	350
DSCI425	During Instantaneous Stop or during Bi-Directional Operation*	22	32	50	72	150	220	310	550	800	1100	2200	3200	4000	5000	6200	8900	12000	12000	12000	12000	12000
		7.75	11.2	17.4	25.1	48.4	69.8	100	194	279	402	775	775	775	775	775	775	775	775	775	775	775
DSCI540 DSCI560	During Instantaneous Stop or during Bi-Directional Operation*	45	65	100	150	300	420	620	1100	1600	2300	4500	6000	8000	10000	12000	17000	25000	25000	25000	25000	—
		27.5	39.6	61.9	89.1	172	248	356	688	990	1426	2750	2750	2750	2750	2750	2750	2750	2750	2750	2750	—
DSCI590	During Instantaneous Stop or during Bi-Directional Operation*	45	65	100	150	300	420	620	1100	1600	2300	4500	6000	8000	10000	12000	17000	25000	25000	—	—	—
		27.5	39.6	61.9	89.1	172	248	356	688	990	1426	2750	2750	2750	2750	2750	2750	2750	2750	—	—	—

*The values are when deceleration control is ON

Overview, Product Series

Brushless Motors

AC Input BMU

AC Input BLE2

AC Input BXII

DC Input BLH

AC Speed Control Motors

DSC

US2

Accessories

Installation

How to Read Speed – Torque Characteristics

The characteristics on the right shows the relationship between each setting speed and torque when a speed control motor is operated.

- ① 50 Hz Safe-Operation Line
- ② 60 Hz Safe-Operation Line

The safe-operation line is the permissible line of torque that is limited by the motor's permissible temperature.

Motors can be operated at the continuous rating within the safe-operation line. The safe-operation line is determined under the most severe condition where there is no heat conduction. Therefore, depending on the installation conditions of the motor, it can be operated beyond the safe-operation line.

Note

● When operating beyond the safe-operation line, ensure that the motor case temperature is maintained at 90°C or less.

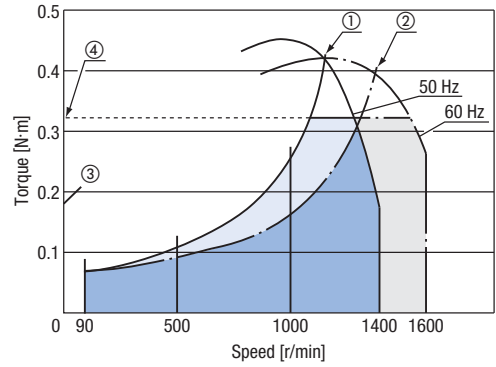
- ③ Starting Torque

This refers to the degree of torque with which the motor can start.

- ④ Permissible Torque on Combination Types

This refers to the permissible value of the motor torque when operating with the gearhead installed.

Because the permissible torque of the combination type varies according to the gear ratio, use the motor without exceeding the value on the list of permissible torques.



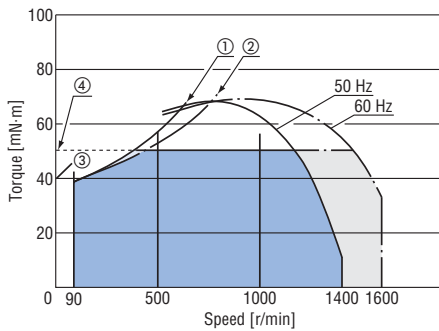
Speed – Torque Characteristics (Reference values)

- ① 50 Hz Safe-Operation Line
- ② 60 Hz Safe-Operation Line
- ③ Starting Torque
- ④ Permissible Torque on Combination Types

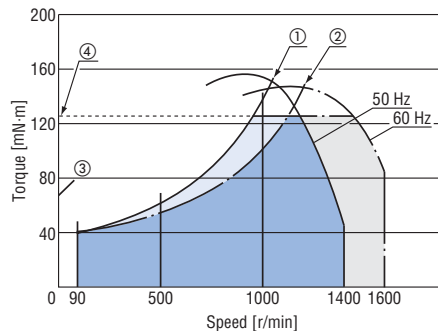
● All output characteristics are representative values. (For motor only)

The permissible torque and starting torque of the motor vary according to the voltage. Use after checking the specifications and permissible torque of the combination type.

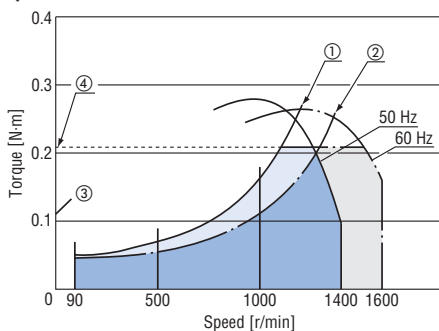
◇ 6 W



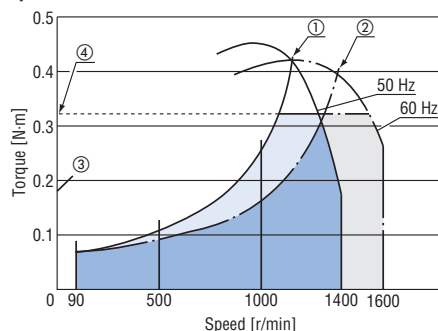
◇ 15 W



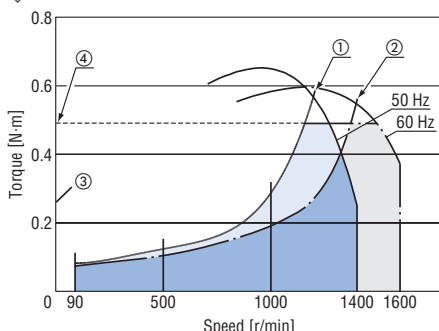
◇ 25 W



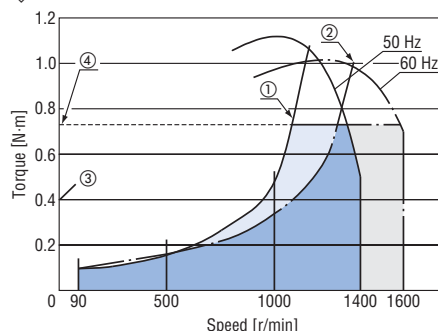
◇ 40 W



◇ 60 W



◇ 90 W



Dimensions Unit: mm

● "Installation screws" are included with the combination type. Dimensions for installation screws → Page C-170

● A number indicating the gear ratio is entered where the box □ is located within the product name.

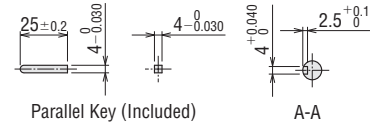
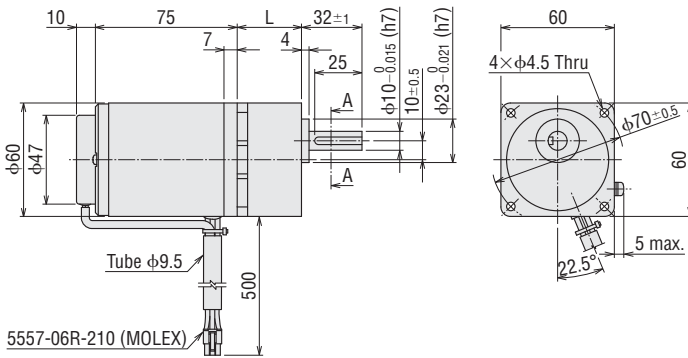
When the accessory connection cable is supplied, a number indicating the cable -**1** (1 m), -**2** (2 m), -**3** (3 m), is specified in the box ■ in the product name.

When the accessory external speed potentiometer is supplied, **V** is specified at the end of the product name.

● Combination Type

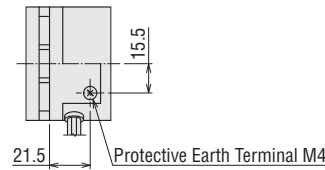
◇ 6 W

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg
DSCI26EC-□■	2IK6UGV-EC	2GV□B	5~25	34	1.3
			30~120	38	
			150~360	43	



Parallel Key (Included)

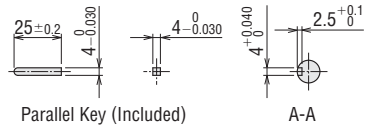
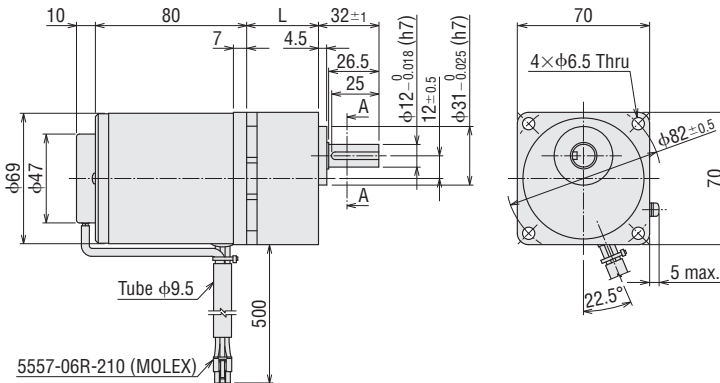
A-A



Detail Drawing of Protective Earth Terminal

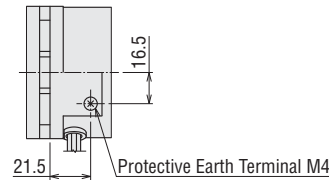
◇ 15 W

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg
DSCI15EC-□■	3IK15UGV-EC	3GV□B	5~25	38	1.8
			30~120	43	
			150~360	48	



Parallel Key (Included)

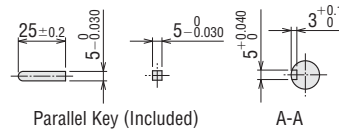
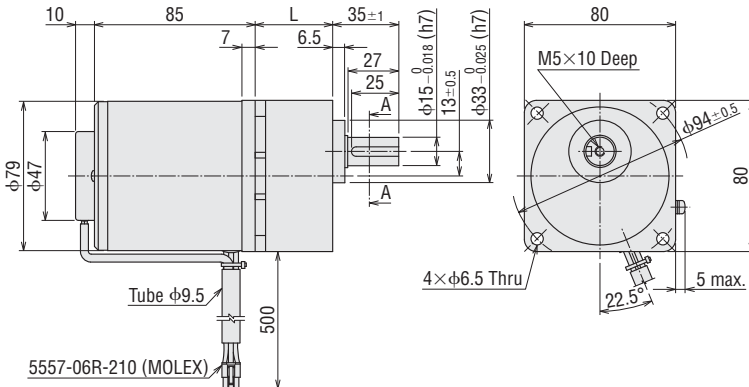
A-A



Detail Drawing of Protective Earth Terminal

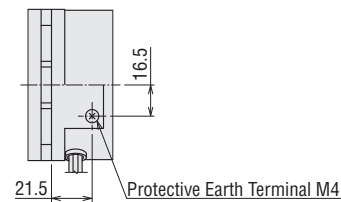
◇ 25 W

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg
DSCI425EC-□■	4IK25UGV-EC	4GV□B	5~25	41	2.55
			30~120	46	
			150~360	51	



Parallel Key (Included)

A-A



Detail Drawing of Protective Earth Terminal

Overview,
Product
Series

Brushless
Motors

AC Input
BMU

AC Input
BLE2

AC Input
BXII

DC Input
BLH

AC Speed
Control
Motors

DSC

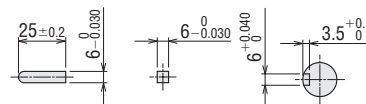
US2

Accessories

Installation

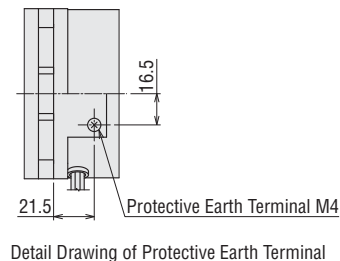
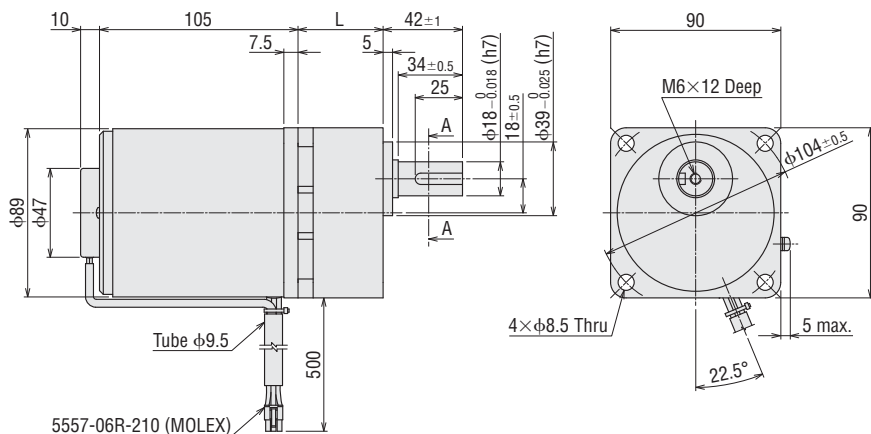
◇ 40 W

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg
DSCI540EC -□■	5IK40UGV-EC	5GV□B	5~18	45	4.1
			25~100	58	
			120~300	64	



Parallel Key (Included)

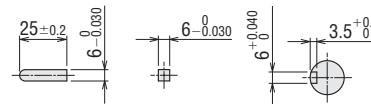
A-A



Detail Drawing of Protective Earth Terminal

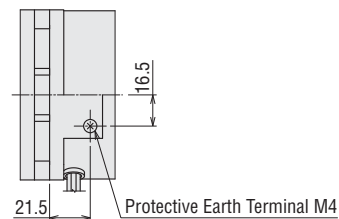
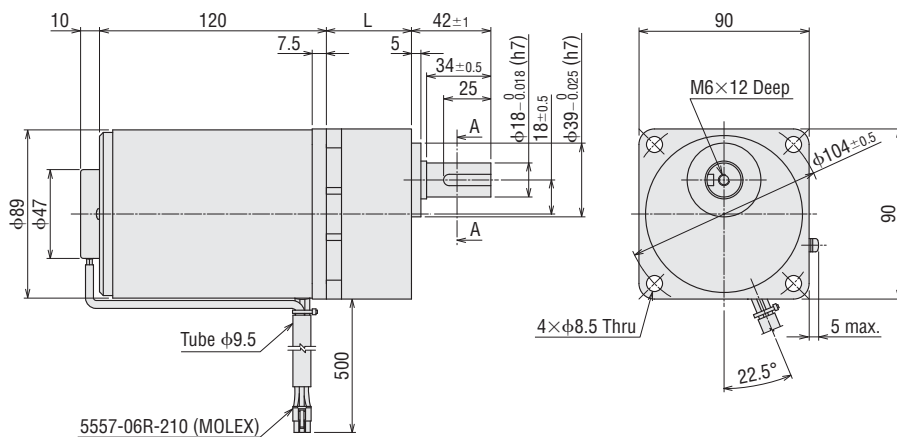
◇ 60 W

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg
DSCI560EC -□■	5IK60UGVH-EC	5GVH□B	5~18	45	4.6
			25~100	58	
			120~300	64	



Parallel Key (Included)

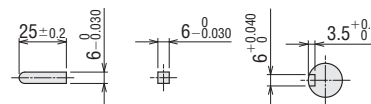
A-A



Detail Drawing of Protective Earth Terminal

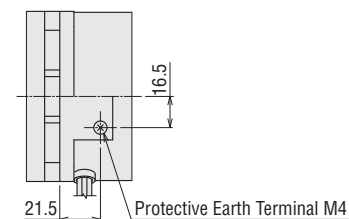
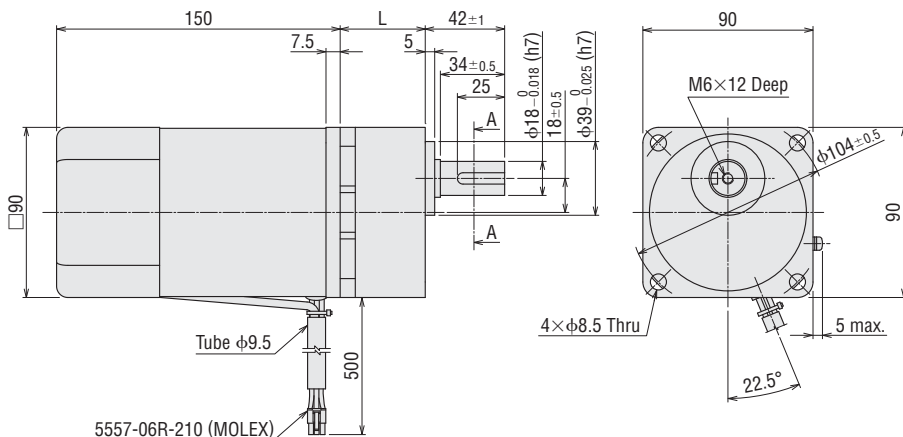
◇ 90 W

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg
DSCI590EC -□■	5IK90UGVR-EC	5GVR□B	5~15	45	4.8
			18~36	58	
			50~180	70	



Parallel Key (Included)

A-A



Detail Drawing of Protective Earth Terminal

Standard Type
Parallel Shaft/
Round Shaft

Electromagnetic
Brake Type
Parallel Shaft

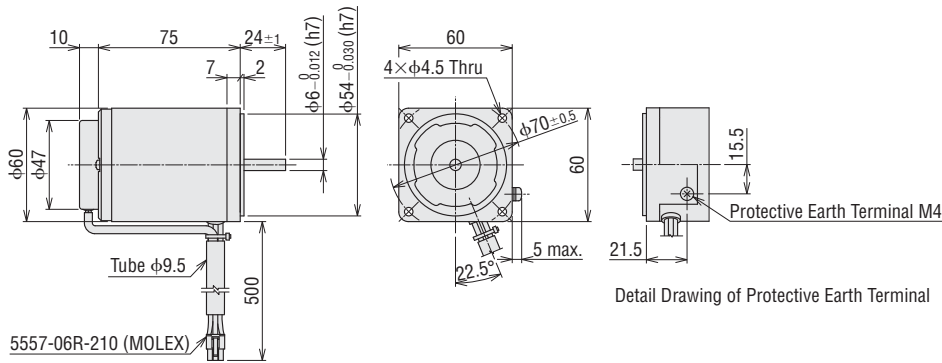
● Round Shaft Type

◇ 6 W

DSCI26EC-A

Motor: 2IK6UA-EC

Mass: 0.8 kg

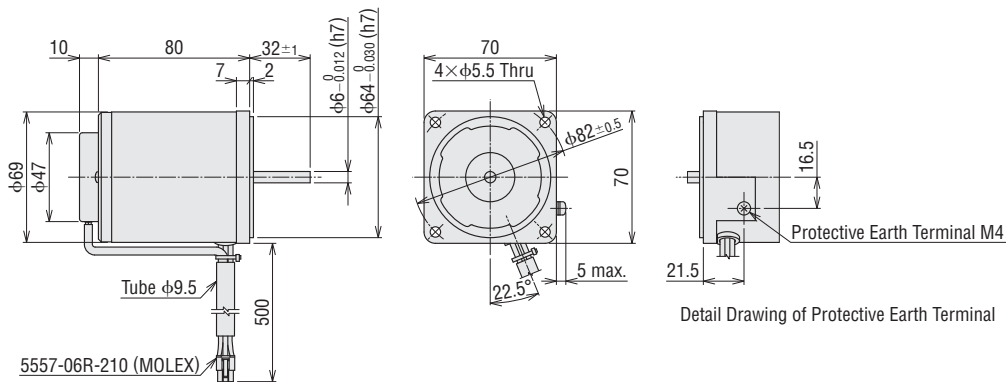


◇ 15 W

DSCI315EC-A

Motor: 3IK15UA-EC

Mass: 1.2 kg

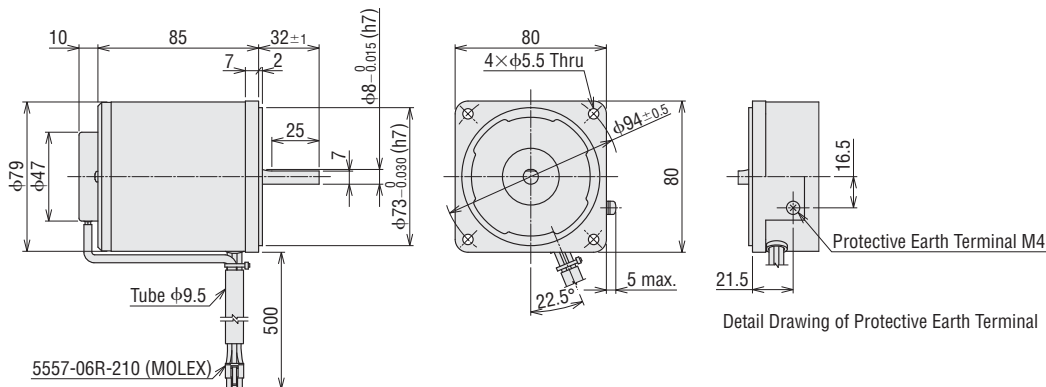


◇ 25 W

DSCI425EC-A

Motor: 4IK25UA-EC

Mass: 1.6 kg



Overview,
Product
Series

Brushless
Motors

AC Input
BMU

AC Input
BLE2

AC Input
BXII

DC Input
BLH

AC Speed
Control
Motors

DSC

US2

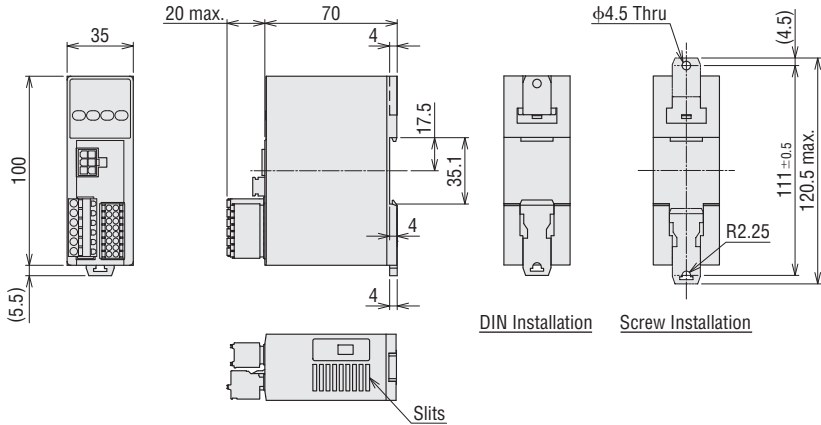
Accessories

Installation

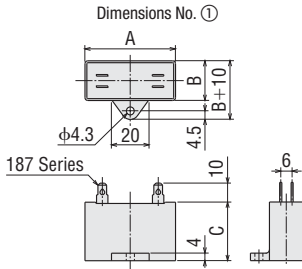
● Speed Controller

DSC-U

Mass: 0.2 kg



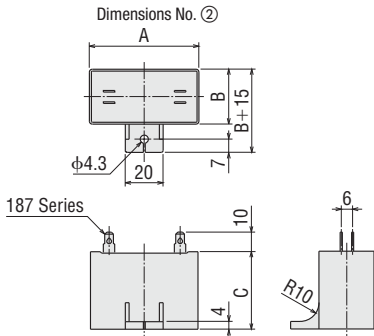
● Capacitor (Included)



● Capacitor Dimensions Unit: mm

Product Name		Capacitor Product Name	A	B	C	Mass g	Dimensions No.
Combination Type	Round Shaft Type						
DSCI26EC -□■	DSCI26EC-A ■	CH06BFAUL	31	14.5	23.5	18	①
DSCI315EC -□■	DSCI315EC-A ■	CH10BFAUL	37	18	27	27	
DSCI425EC -□■	DSCI425EC-A ■	CH15BFAUL	38	21	31	37	
DSCI540EC -□■	DSCI540EC-A ■	CH23BFAUL	48	21	31	43	
DSCI560EC -□■	DSCI560EC-A ■	CH30BFAUL	58	21	31	50	
DSCI590EC -□■	DSCI590EC-A ■	CH60BFAUL	58	29	41	92	②

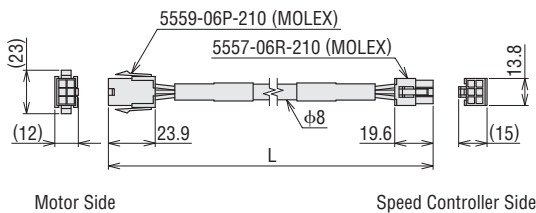
● A capacitor cap is included with the capacitor.



● Connection Cable (Included)

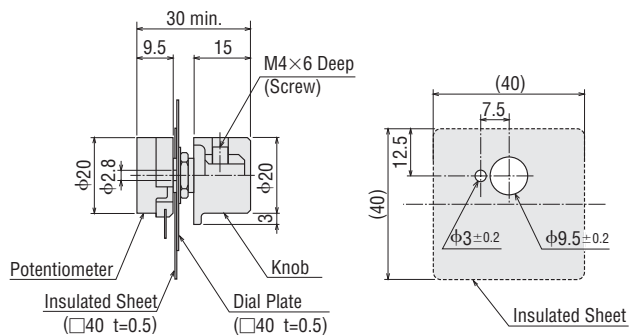
Only for the products including a connection cable.

Cable Length	Length L (m)
1 m	1
2 m	2
3 m	3



● External Speed Potentiometer (Included)

Only for the products including an external speed potentiometer.



Overview, Product Series

Brushless Motors

AC Input BMU

AC Input BLE2

AC Input BXII

DC Input BLH

AC Speed Control Motors

DSC

US2

Accessories

Installation

List of Motor and Speed Controller Combinations

● Parallel Shaft Combination Type

Output Power	Product Name	Combination Motor Product Name*	Motor Product Name	Gearhead Product Name	Speed Controller Product Name
6 W	DSCI26EC -□■	2IK6UEC-□	2IK6UGV-EC	2GV□B	DSC-U
15 W	DSCI315EC -□■	3IK15UEC-□	3IK15UGV-EC	3GV□B	
25 W	DSCI425EC -□■	4IK25UEC-□	4IK25UGV-EC	4GV□B	
40 W	DSCI540EC -□■	5IK40UEC-□	5IK40UGV-EC	5GV□B	
60 W	DSCI560EC -□■	5IK60UEC-□	5IK60UGVH-EC	5GVH□B	
90 W	DSCI590EC -□■	5IK90UEC-□	5IK90UGVR-EC	5GVR□B	

*Combination motor product names are names of special order products in which motors and gearheads are pre-assembled.

● Round Shaft Type

Output Power	Product Name	Motor Product Name	Speed Controller Product Name
6 W	DSCI26EC-A ■	2IK6UA-EC	DSC-U
15 W	DSCI315EC-A ■	3IK15UA-EC	
25 W	DSCI425EC-A ■	4IK25UA-EC	
40 W	DSCI540EC-A ■	5IK40UA-EC	
60 W	DSCI560EC-A ■	5IK60UA-EC	
90 W	DSCI590EC-A ■	5IK90UA-EC	

● A number indicating the gear ratio is entered where the box □ is located within the product name.

When the accessory connection cable is supplied, a number indicating the cable **-1** (1 m), **-2** (2 m), **-3** (3 m), is specified in the box ■ in the product name.

When the accessory external speed potentiometer is supplied, **V** is specified at the end of the product name.

Standard Type
Parallel Shaft/
Round Shaft

Electromagnetic
Brake Type
Parallel Shaft

Electromagnetic Brake Type

Parallel Shaft Combination Type



Parallel Shaft Combination Type

Overview,
Product
Series

Brushless
Motors

AC Input
BMU

AC Input
BLE2

AC Input
BXII

DC Input
BLH

AC Speed
Control
Motors

DSC

US2

Accessories

Installation

Product Line

Combination Type

Motor and gearhead are delivered pre-assembled.

The combination of motors and gearheads can be changed, and they are also available separately. In addition, the gearhead can be removed and the assembly position can be changed in 90° increments.

- Connection cable included: The list price is including a motor, a gearhead, a speed controller and a connection cable (1 m, 2 m or 3 m).
- Connection cable not included: The list price is including a motor, a gearhead and a speed controller.
- For products that include an external speed potentiometer, €7.00 will be added to the price.

For the single-phase 100 VAC, 200 VAC or 110/115 VAC models, please contact the nearest Oriental Motor sales office.

Parallel Shaft Combination Type

Output Power	Power Supply Voltage	Product Name	Gear Ratio	List Price	
				Connection Cable Included	Connection Cable Not Included
6 W	Single-Phase 220/230 VAC	DSCI26ECM-□■	7.5, 9, 12.5, 15, 18	€274.00	€255.00
			25, 30, 36	€279.00	€260.00
			50, 60, 75, 90, 100, 120, 150, 180	€284.00	€265.00
			250, 300, 360	€319.00	€300.00
15 W	Single-Phase 220/230 VAC	DSCI315ECM-□■	7.5, 9, 12.5, 15, 18	€283.00	€264.00
			25, 30, 36	€287.00	€268.00
			50, 60, 75, 90, 100, 120, 150, 180	€293.00	€274.00
			250, 300, 360	€327.00	€308.00
25 W	Single-Phase 220/230 VAC	DSCI425ECM-□■	7.5, 9, 12.5, 15, 18	€308.00	€289.00
			25, 30, 36	€312.00	€293.00
			50, 60, 75, 90, 100, 120, 150, 180	€318.00	€299.00
			250, 300, 360	€354.00	€335.00
40 W	Single-Phase 220/230 VAC	DSCI540ECM-□■	7.5, 9, 12.5, 15, 18	€339.00	€320.00
			25, 30, 36	€344.00	€325.00
			50, 60, 75, 90, 100, 120, 150, 180	€349.00	€330.00
			250, 300	€410.00	€391.00
60 W	Single-Phase 220/230 VAC	DSCI560ECM-□■	7.5, 9, 12.5, 15, 18	€394.00	€375.00
			25, 30, 36, 50, 60, 75, 90, 100	€403.00	€384.00
			120, 150, 180	€411.00	€392.00
			250, 300	€437.00	€418.00
90 W	Single-Phase 220/230 VAC	DSCI590ECM-□■	7.5, 9, 12.5, 15, 18	€408.00	€389.00
			25, 30, 36, 50, 60	€424.00	€405.00
			75, 90, 100, 120, 150, 180	€431.00	€412.00

The following items are included with each product.

Motor, Gearhead, Speed Controller, Capacitor, Capacitor Cap, Installation Screws, Parallel Key, Connection Cable*1, External Speed Potentiometer*2, Operating Manual

*1 Only for the products including a connection cable.

*2 Only for the products including an external speed potentiometer.

● A number indicating the gear ratio is entered where the box □ is located within the product name.

When the accessory connection cable is supplied, a number indicating the cable -1 (1 m), -2 (2 m), -3 (3 m), is specified in the box ■ in the product name.

When the accessory external speed potentiometer is supplied, V is specified at the end of the product name.

Product Number

DSC I 4 25 EC M - 50 -1 V

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

Standard Type
Parallel Shaft/
Round Shaft

Electromagnetic
Brake Type
Parallel Shaft

①	Series Name	DSC, DSC Series
②	Motor Type	I: Induction Motor
③	Motor Frame Size	2: 60 mm 3: 70 mm 4: 80 mm 5: 90 mm
④	Output Power (W)	(Example) 25: 25 W
⑤	Power Supply Voltage	EC: Single-Phase 220/230 VAC
⑥		M: Power Off Activated Type Electromagnetic Brake
⑦	Gear Ratio/Shaft Type	Number: Gear ratio for combination types
⑧	Connection Cable (Included)	Number: Included Connection Cable Length -1: 1 m, -2: 2 m, -3: 3 m None: Connection cable not included
⑨	External Speed Potentiometer (Included)	V: Included External Speed Potentiometer None: External speed potentiometer not included

● Examples of product names that indicate connection cable availability and length

3 m connection cable included → **DSCI425ECM-50-3**

Connection cable not included → **DSCI425ECM-50**

Deceleration Control Function Integrated with the Electromagnetic Brake Type Package

The electromagnetic brake type features a deceleration control function which allows speed control during vertical operation and gravitational operation.

"What is the Deceleration Control Function?"

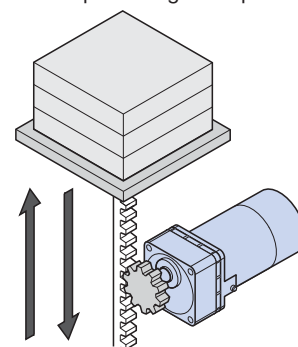
It is a function that applies brake current automatically to regulate the speed when the motor rotates faster than the setting speed. Even when force is applied in the direction of the motor output shaft's rotation due to vertical operation or an inertial load, the motor can be controlled to meet the setting speed.

"Deceleration Control" ON (Factory setting): Applicable for vertical operation, gravitational operation, horizontal operation, position holding.

"Deceleration Control" OFF : Applicable for horizontal operation, position holding. (Variable speed range is expanded.)

● Specification values and permissible torque values will differ based on whether the deceleration control is ON or OFF.

Item	"Deceleration Control" Parameter ON (Factory setting)	"Deceleration Control" Parameter OFF
Deceleration Control Function	Enabled	Disabled
Variable Speed Range	300~1400 r/min (50 Hz) 300~1600 r/min (60 Hz)	90~1400 r/min (50 Hz) 90~1400 r/min (60 Hz)
Acceleration Time/Deceleration Time Range	0.2~15.0 seconds	0.0~15.0 seconds





Specifications Continuous Rating*1

Product Name	Max. Output Power W	Voltage VAC	Frequency Hz	Variable Speed Range*2 r/min	Current A	Power Consumption W	Capacitor μF	Motor Overheat Protection Device	Electromagnetic Brake (Power off activated type)	
									Static Friction Torque mN·m	
DSCI26ECM -□■	6	Single-Phase 220	50	300 (90)~1400	0.135	29	0.6	ZP	30	
			60	300 (90)~1600						
			Single-Phase 230	50						300 (90)~1400
				60						300 (90)~1600
DSCI315ECM -□■	15	Single-Phase 220	50	300 (90)~1400	0.23	43	1.0	TP	80	
			60	300 (90)~1600		46				
		Single-Phase 230	50	300 (90)~1400		44				
			60	300 (90)~1600		47				
DSCI425ECM -□■	25	Single-Phase 220	50	300 (90)~1400	0.37	70	1.5	TP	100	
			60	300 (90)~1600						
		Single-Phase 230	50	300 (90)~1400						
			60	300 (90)~1600						
DSCI540ECM -□■	40	Single-Phase 220	50	300 (90)~1400	0.55	96	2.3	TP	200	
			60	300 (90)~1600		104				
		Single-Phase 230	50	300 (90)~1400		99				
			60	300 (90)~1600		105				
DSCI560ECM -□■	60	Single-Phase 220	50	300 (90)~1400	0.71	129	3.0	TP	500	
			60	300 (90)~1600	0.74	143				
		Single-Phase 230	50	300 (90)~1400	0.72	132				
			60	300 (90)~1600	0.74	144				
DSCI590ECM -□■	90	Single-Phase 220	50	300 (90)~1400	1.2	201	6.0	TP	500	
			60	300 (90)~1600	1.3	226				
		Single-Phase 230	50	300 (90)~1400	1.2	204				
			60	300 (90)~1600	1.3	228				

*1 When deceleration control is ON, the rated specifications will vary. For details, check "Common specifications - Permissible continuous operation time while deceleration control is ON".

*2 The value in () can be set when deceleration control is OFF.

● The values in the table are characteristics for the motor only. The variable speed ranges shown are under no load conditions.

ZP: This indicates that it is impedance protected. TP: This indicates that there is a built-in thermal protector (automatic return type).

Common Specifications

Item	Specifications	
Speed Setting Methods	Select one of the following setting methods. · Setting via control panel A max. of 4 patterns of operating data can be set · External speed potentiometer: PAVR-20KZ (20 kΩ, 1/4 W)---Included or accessories (sold separately) · External DC Voltage: 0~5 VDC, or 0~10 VDC	
Acceleration Time and Deceleration Time Setting Range	0.2~15.0 seconds (0.0~15.0 seconds: It can be set when the deceleration control is OFF.) Acceleration time/deceleration time varies with the load condition of the motor.	
Function	Monitoring Mode	Speed, operating data number, alarm code, warning code, I/O monitor
	Data Mode	Speed, acceleration time, deceleration time, reset
	Parameter Mode	Gear ratio, speed increasing ratio, fixed last digit display, initial operation inhibition alarm, external speed command input, external speed command voltage selection, external speed control offset, speed upper and lower limit, deceleration control, brake type, input function selection, output function selection, motor lock detection time, motor rotation direction, reset
	Test Mode	JOG operation, releasing of the electromagnetic brake
Control Power Supply	Lock data editing	
Input Signal	24 VDC±10% 0.15 A or more	
Output Signal	Photocoupler Input Input resistance: 4.7 kΩ Arbitrary signal assignment to IN0~IN5 input (6 points) is possible. []: Initial Setting [FWD], [REV], [MO], [M1], [ALARM-RESET], [FREE], EXT-ERROR Source Input/Sink Input---Can be switched using the selection switch: Factory setting source input	
	Photocoupler and Open-Collector Output External Power Supply: 4.5~30 VDC, 40 mA max. Arbitrary signal assignment to OUT0, OUT1 output (2 points) is possible. []: Initial Setting [SPEED-OUT], [ALARM-OUT], TH-OUT, WNG Source Output/Sink Output---Supported through external wiring	
Protective Function	When the following protective functions are activated, output to the motor is shut down, the electromagnetic brake is engaged and the motor stops. The alarm output will be switched to OFF. At the same, the alarm code will be displayed on the control panel and the ALARM LED will illuminate. Alarm Types: Motor overheat, motor lock, overspeed, EEPROM error, initial operation inhibition, external stop	
Permissible Continuous Operation Time while Deceleration Control is ON	6 W	Permissible Continuous Operation Time: Continuous Operating Duty: Continuous
	15 W, 25 W, 40 W	Permissible Continuous Operation Time: 1 minute Operating Duty: 50% max. (Example: 1 minute operating, 1 minute stopped)
	60 W, 90 W	Permissible Continuous Operation Time: 1 minute Operating Duty: 33% max. (Example: 1 minute operating, 2 minute stopped)
Maximum Extension Length	Motor and Speed Controller Distance: 10.5 m (when an accessory connection cable is used)	

● A number indicating the gear ratio is entered where the box □ is located within the product name.

When the accessory connection cable is supplied, a number indicating the cable -1 (1 m), -2 (2 m), -3 (3 m), is specified in the box ■ in the product name.

When the accessory external speed potentiometer is supplied, V is specified at the end of the product name.

General Specifications

Item	Motor	Speed Controller
Insulation Resistance	100 MΩ or more when a 500 VDC megger is applied between the windings and the case after continuous operation under normal ambient temperature and humidity.	100 MΩ or more when a 500 VDC megger is applied between the main circuit terminal and the control circuit terminal, between the main circuit terminal and the case, and between the main circuit terminal and FG after continuous operation under normal ambient temperature and humidity.
Dielectric Strength	Sufficient to withstand 1.5 kVAC at 50 Hz or 60 Hz applied between the windings and the case for 1 minute after continuous operation under normal ambient temperature and humidity.	Sufficient to withstand 1.9 kVAC at 50 Hz or 60 Hz applied between the main circuit terminal and the control circuit terminal and between the main circuit terminal and the case, and 1.5 kVAC at 50 Hz or 60 Hz applied between the main circuit terminal and FG for 1 minute after continuous operation under normal ambient temperature and humidity.
Temperature Rise	Temperature rise of the winding temperature is 80°C or less when measured by the resistance change method after no-load continuous operation under normal ambient temperature and humidity.	—
Overheat Protection Device	The 6 W type is impedance protected. All other motors have a built-in thermal protector (Automatic return type).	—
Operating Environment	Ambient Temperature	0~+40°C (Non-freezing)
	Ambient Humidity	85% or less (Non-condensing)
	Altitude	Max. of 1000 m above sea level
Thermal Class	130 (B)	—
Degree of Protection	IP20	IP20

Note

Do not measure insulation resistance or perform the dielectric voltage test while the motor and speed controller are connected.

Output Shaft Speed, Permissible Torque and Starting Torque while Deceleration Control is ON (Factory setting)

Description of deceleration control → Page D-126

Output Shaft Rotation Speed

Motor Shaft Speed

Low speed: 300 r/min, High speed at 50 Hz: 1400 r/min, High speed at 60 Hz: 1600 r/min

Unit: r/min

Gear Ratio		7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300	360
		High Speed	50 Hz	186	155	112	93	77	56	46	38	28	23	18.6	15.5	14	11.6	9.3	7.7	5.6
	60 Hz	213	177	128	106	88	64	53	44	32	26	21	17.7	16	13.3	10.6	8.8	6.4	5.3	4.4
Low Speed		40	33	24	20	16	12	10	8.3	6	5	4	3.3	3	2.5	2	1.6	1.2	1	0.83

Permissible Torque and Starting Torque

- When within the variable speed range (50 Hz: 300~1400 r/min, 60 Hz: 300~1600 r/min), permissible torque and starting torque are a constant value.
- During horizontal operation, even when deceleration control is ON, the value is the same as when deceleration control is OFF. Permissible torque and starting torque while deceleration control is OFF → Page D-129
- A colored background () indicates gear shaft rotation in the same direction as the motor shaft. Others rotate in the opposite direction.

Unit: N·m

Product Name	Gear Ratio	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300	360
		Permissible Torque Starting Torque	DSCI26ECM	0.20	0.24	0.34	0.41	0.49	0.68	0.77	0.93	1.3	1.5	1.9	2.3	2.6	3.1	3.6	4.4	6
DSCI315ECM	0.34		0.41	0.56	0.68	0.81	1.1	1.3	1.5	2.2	2.6	3.2	3.9	4.3	5.2	6.1	7.3	10	10	10
DSCI425ECM	0.54		0.65	0.90	1.1	1.3	1.8	2.1	2.5	3.4	4.1	5.2	6.2	6.9	8.3	9.7	11.7	16	16	16
DSCI540ECM	0.95		1.1	1.6	1.9	2.3	3.0	3.6	4.3	6.0	7.2	9.0	10.8	12.0	13.6	17.0	20.4	28.4	30	—
DSCI560ECM	1.4		1.7	2.4	2.8	3.4	4.5	5.4	6.5	9.0	10.8	13.5	16.3	18.1	20.4	25.5	30	30	30	—
DSCI590ECM	2.2		2.6	3.6	4.3	5.0	6.9	8.3	9.9	13.8	16.5	19.4	23.3	25.9	31.1	38.9	40	—	—	—

Output Shaft Speed, Permissible Torque and Starting Torque while Deceleration Control is OFF

Description of deceleration control → Page D-126

Output Shaft Rotation Speed

- Motor Shaft Speed

Low speed: 90 r/min, High speed at 50 Hz: 1400 r/min, High speed at 60 Hz: 1600 r/min

Unit: r/min

Gear Ratio		7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300	360
High Speed	50 Hz	186	155	112	93	77	56	46	38	28	23	18.6	15.5	14	11.6	9.3	7.7	5.6	4.6	3.8
	60 Hz	213	177	128	106	88	64	53	44	32	26	21	17.7	16	13.3	10.6	8.8	6.4	5.3	4.4
Low Speed		12	10	7.2	6	5	3.6	3	2.5	1.8	1.5	1.2	1	0.9	0.75	0.6	0.5	0.36	0.3	0.25

Permissible Torque and Starting Torque

- A colored background () indicates gear shaft rotation in the same direction as the motor shaft, while the others rotate in the opposite direction.

Unit: N·m

Product Name	Gear Ratio		7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300	360		
	Motor Shaft Speed	r/min																					
DSCI26ECM	Permissible	1200	220 VAC 50 Hz	0.28	0.34	0.47	0.57	0.68	0.95	1.1	1.3	1.8	2.2	2.7	3.3	3.6	4.3	5.1	6	6	6	6	
			230 VAC 50 Hz	0.31	0.37	0.52	0.62	0.75	1.0	1.2	1.4	2.0	2.4	3.0	3.6	4.0	4.7	5.6	6	6	6	6	
		1450	220 VAC 60 Hz	0.31	0.37	0.52	0.62	0.75	1.0	1.2	1.4	2.0	2.4	3.0	3.6	4.0	4.7	5.6	6	6	6	6	6
			230 VAC 60 Hz	0.34	0.41	0.56	0.68	0.81	1.1	1.3	1.5	2.2	2.6	3.2	3.9	4.3	5.2	6	6	6	6	6	6
		90	220 VAC 50/60 Hz	0.27	0.32	0.45	0.54	0.65	0.90	1.0	1.2	1.7	2.1	2.6	3.1	3.4	4.1	4.9	5.8	6	6	6	6
			230 VAC 50 Hz	0.25	0.30	0.42	0.50	0.60	0.83	0.95	1.1	1.6	1.9	2.4	2.9	3.2	3.8	4.5	5.4	6	6	6	6
	Starting	230 VAC 60 Hz	0.26	0.32	0.44	0.53	0.63	0.88	1.0	1.2	1.7	2.0	2.5	3.0	3.4	4.0	4.7	5.7	6	6	6	6	
		220 VAC 50/60 Hz	0.30	0.36	0.50	0.59	0.71	0.99	1.1	1.4	1.9	2.3	2.8	3.4	3.8	4.5	5.3	6	6	6	6	6	
		230 VAC 50 Hz	0.30	0.36	0.50	0.59	0.71	0.99	1.1	1.4	1.9	2.3	2.8	3.4	3.8	4.5	5.3	6	6	6	6	6	
	DSCI315ECM	Permissible	1200	50 Hz	0.84	1.0	1.4	1.7	2.0	2.8	3.2	3.9	5.4	6.5	8.1	9.7	10	10	10	10	10	10	10
220 VAC 60 Hz				0.74	0.89	1.2	1.5	1.8	2.5	2.8	3.4	4.7	5.7	7.1	8.5	9.5	10	10	10	10	10	10	
1450			230 VAC 60 Hz	0.81	0.97	1.4	1.6	1.9	2.7	3.1	3.7	5.2	6.2	7.7	9.3	10	10	10	10	10	10	10	10
			90	0.27	0.32	0.45	0.54	0.65	0.90	1.0	1.2	1.7	2.1	2.6	3.1	3.4	4.1	4.9	5.8	8.1	9.7	10	10
Starting		220 VAC 50/60 Hz	0.45	0.54	0.75	0.90	1.1	1.5	1.7	2.1	2.9	3.5	4.3	5.2	5.8	6.9	8.1	9.8	10	10	10	10	
		230 VAC 50 Hz	0.49	0.58	0.81	0.97	1.2	1.6	1.9	2.2	3.1	3.7	4.6	5.6	6.2	7.4	8.7	10	10	10	10	10	
		230 VAC 60 Hz	0.55	0.66	0.91	1.1	1.3	1.8	2.1	2.5	3.5	4.2	5.2	6.3	7.0	8.4	9.8	10	10	10	10	10	
DSCI425ECM		Permissible	1200	50 Hz	1.4	1.7	2.3	2.8	3.3	4.6	5.3	6.3	8.8	10.6	13.2	15.9	16	16	16	16	16	16	16
				60 Hz	1.4	1.7	2.3	2.8	3.3	4.6	5.3	6.3	8.8	10.6	13.2	15.9	16	16	16	16	16	16	16
			90	0.27	0.32	0.45	0.54	0.65	0.90	1.0	1.2	1.7	2.1	2.6	3.1	3.4	4.1	4.9	5.8	8.1	9.7	11.7	
	Starting	220 VAC 50/60 Hz	0.74	0.89	1.2	1.5	1.8	2.5	2.8	3.4	4.7	5.7	7.1	8.5	9.5	11.4	13.4	16	16	16	16		
		230 VAC 50/60 Hz	0.81	0.97	1.4	1.6	1.9	2.7	3.1	3.7	5.2	6.2	7.7	9.3	10.3	12.4	14.6	16	16	16	16		
		DSCI540ECM	Permissible	1200	50 Hz	2.2	2.6	3.6	4.3	5.2	6.9	8.3	9.9	13.8	16.5	20.6	24.8	27.5	30	30	30	30	30
60 Hz	2.2				2.6	3.6	4.3	5.2	6.9	8.3	9.9	13.8	16.5	20.6	24.8	27.5	30	30	30	30	30	—	
90	50 Hz			0.44	0.53	0.73	0.88	1.1	1.4	1.7	2.0	2.8	3.4	4.2	5.0	5.6	6.3	7.9	9.5	13.2	15.8	—	
	60 Hz			0.47	0.57	0.79	0.95	1.1	1.5	1.8	2.2	3.0	3.6	4.5	5.4	6.0	6.8	8.5	10.2	14.2	17	—	
Starting			1.3	1.5	2.1	2.6	3.1	4.1	4.9	5.9	8.2	9.8	12.3	14.7	16.3	18.5	23.1	27.7	30	30	—		
DSCI560ECM	Permissible		1200	50 Hz	3.3	4.0	5.5	6.6	7.9	10.5	12.6	15.2	21.1	25.3	30	30	30	30	30	30	30	30	—
		220 VAC 60 Hz		3.1	3.7	5.2	6.2	7.5	9.9	11.9	14.2	19.8	23.7	29.7	30	30	30	30	30	30	30	—	
		1450	230 VAC 60 Hz	3.3	4.0	5.5	6.6	7.9	10.5	12.6	15.2	21.1	25.3	30	30	30	30	30	30	30	30	—	
			220 VAC 50 Hz	0.54	0.65	0.90	1.1	1.3	1.7	2.1	2.5	3.4	4.1	5.2	6.2	6.9	7.8	9.7	11.7	16.2	19.4	—	
		90	220 VAC 60 Hz	0.51	0.61	0.84	1.0	1.2	1.6	1.9	2.3	3.2	3.9	4.8	5.8	6.5	7.3	9.1	10.9	15.2	18.2	—	
			230 VAC 50 Hz	0.57	0.69	0.96	1.1	1.4	1.8	2.2	2.6	3.7	4.4	5.5	6.6	7.3	8.3	10.3	12.4	17.2	20.7	—	
	Starting	230 VAC 60 Hz	0.54	0.65	0.90	1.1	1.3	1.7	2.1	2.5	3.4	4.1	5.2	6.2	6.9	7.8	9.7	11.7	16.2	19.4	—		
		220 VAC 50 Hz	1.9	2.3	3.2	3.8	4.5	6.0	7.2	8.7	12.0	14.4	18.1	21.7	24.1	27.2	30	30	30	30	—		
		220 VAC 60 Hz	2.0	2.3	3.3	3.9	4.7	6.2	7.5	9.0	12.5	15.0	18.7	22.4	24.9	28.2	30	30	30	30	—		
		230 VAC 50 Hz	2.0	2.3	3.3	3.9	4.7	6.2	7.5	9.0	12.5	15.0	18.7	22.4	24.9	28.2	30	30	30	30	—		
230 VAC 60 Hz		2.0	2.4	3.4	4.1	4.9	6.5	7.7	9.3	12.9	15.5	19.4	23.2	25.8	29.2	30	30	30	30	—			
DSCI590ECM	Permissible	1200	50 Hz	4.9	5.9	8.2	9.9	11.3	15.7	18.8	22.6	31.4	37.7	40	40	40	40	40	—	—	—		
			60 Hz	4.9	5.9	8.2	9.9	11.3	15.7	18.8	22.6	31.4	37.7	40	40	40	40	40	40	—	—		
		90	0.64	0.77	1.1	1.3	1.5	2.0	2.5	2.9	4.1	4.9	5.8	6.9	7.7	9.2	11.5	13.9	—	—			
	Starting	220 VAC 50 Hz	3.3	4.0	5.5	6.6	7.6	10.5	12.6	15.2	21.1	25.3	29.8	35.7	39.7	40	40	40	—	—			
		220 VAC 60 Hz	3.4	4.1	5.6	6.8	7.7	10.8	12.9	15.5	21.5	25.8	30.4	36.5	40	40	40	40	—	—			
		230 VAC 50 Hz	3.5	4.2	5.9	7.0	8.0	11.2	13.4	16.1	22.4	26.8	31.6	37.9	40	40	40	40	—	—			
230 VAC 60 Hz		3.6	4.3	6.0	7.2	8.2	11.4	13.7	16.4	22.8	27.3	32.2	38.6	40	40	40	40	—	—				

Overview, Product Series

Brushless Motors

AC Input BMU

AC Input BLE2

AC Input BXII

DC Input BLH

AC Speed Control Motors

DSC

US2

Accessories

Installation

■ Permissible Radial Load and Permissible Axial Load

→ Page D-117

■ Permissible Inertia J

→ Page D-117

■ How to Read Speed – Torque Characteristics

→ Page D-118

■ Speed – Torque Characteristics (Reference Values)

→ Page D-118

Standard Type
Parallel Shaft/
Round Shaft

Electromagnetic
Brake Type
Parallel Shaft

Dimensions Unit: mm

● "Installation screws" are included with the combination type. Dimensions for installation screws → Page C-170

● A number indicating the gear ratio is entered where the box □ is located within the product name.

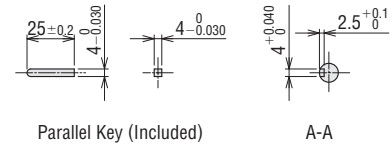
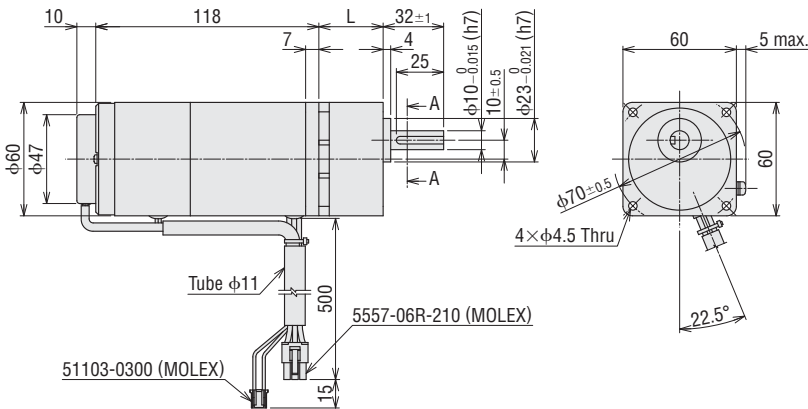
When the accessory connection cable is supplied, a number indicating the cable **-1** (1 m), **-2** (2 m), **-3** (3 m), is specified in the box ■ in the product name.

When the accessory external speed potentiometer is supplied, **V** is specified at the end of the product name.

Combination Type

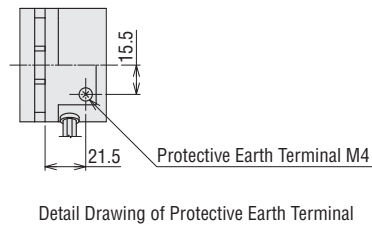
◇ 6 W

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg
DSCI26ECM-□■	2IK6UGV-ECM	2GV□B	7.5~25	34	1.7
			30~120	38	
			150~360	43	



Parallel Key (Included)

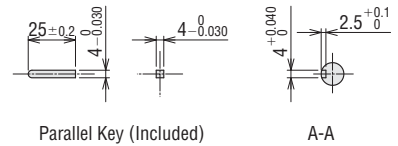
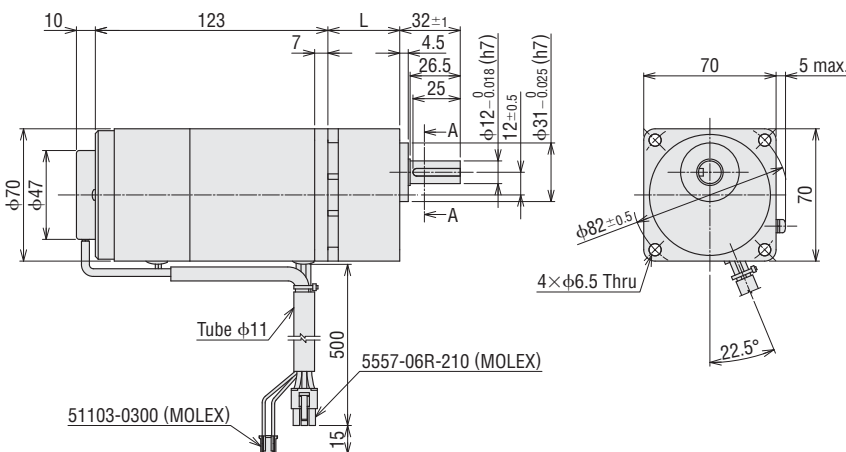
A-A



Detail Drawing of Protective Earth Terminal

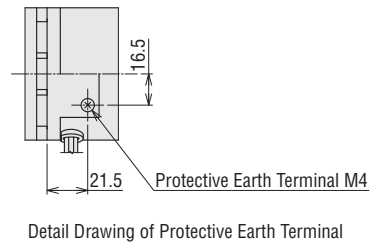
◇ 15 W

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg
DSCI315ECM-□■	3IK15UGV-ECM	3GV□B	7.5~25	38	2.2
			30~120	43	
			150~360	48	



Parallel Key (Included)

A-A



Detail Drawing of Protective Earth Terminal

Overview,
Product
Series

Brushless
Motors

AC Input
BMU

AC Input
BLE2

AC Input
BXII

DC Input
BLH

AC Speed
Control
Motors

DSC

US2

Accessories

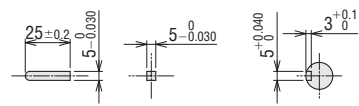
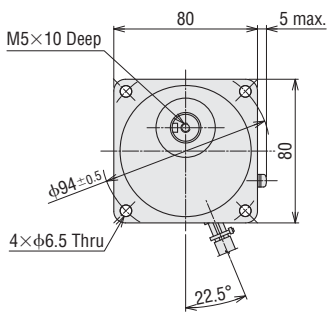
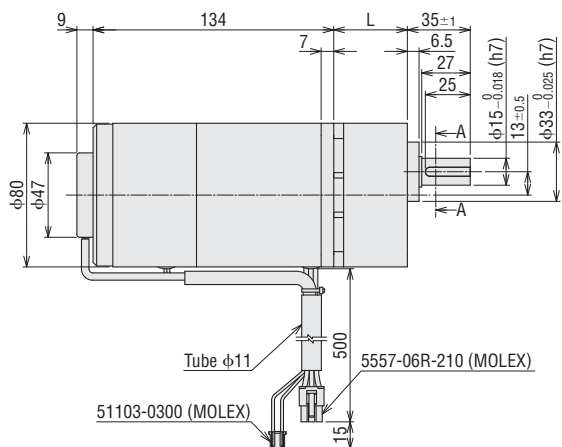
Installation

◇ 25 W

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg
DSCI425ECM -□■	4IK25UGV-ECM	4GV□B	7.5~25	41	3.25
			30~120	46	
			150~360	51	

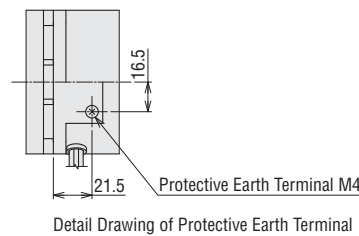
Standard Type
Parallel Shaft/
Round Shaft

Electromagnetic
Brake Type
Parallel Shaft



Parallel Key (Included)

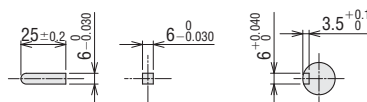
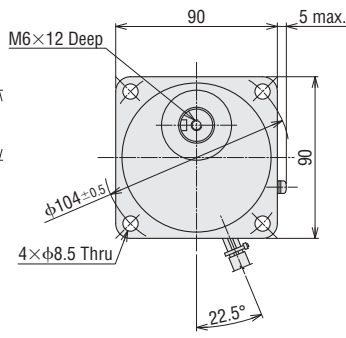
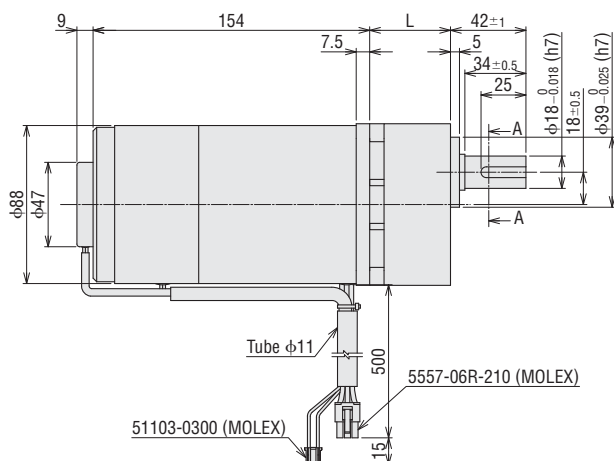
A-A



Detail Drawing of Protective Earth Terminal

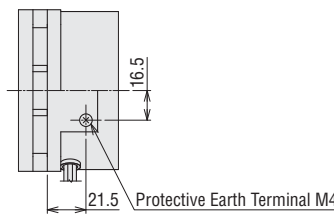
◇ 40 W

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg
DSCI540ECM -□■	5IK40UGV-ECM	5GV□B	7.5~18	45	4.7
			25~100	58	
			120~300	64	



Parallel Key (Included)

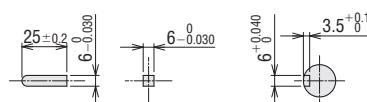
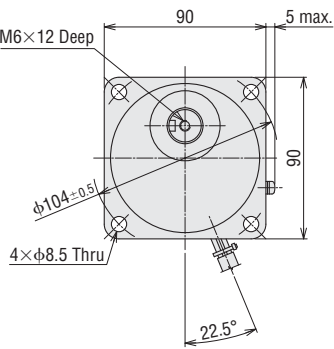
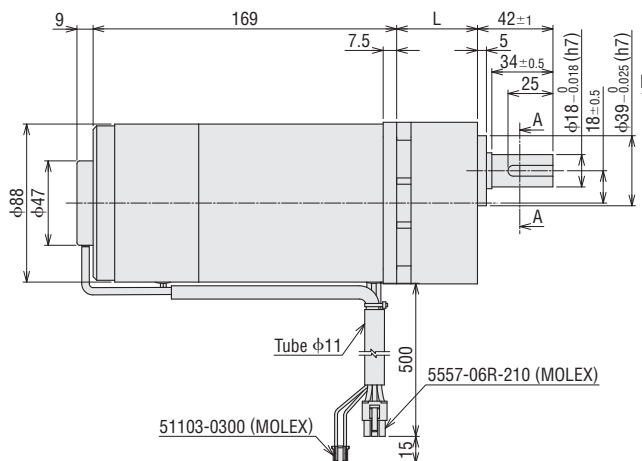
A-A



Detail Drawing of Protective Earth Terminal

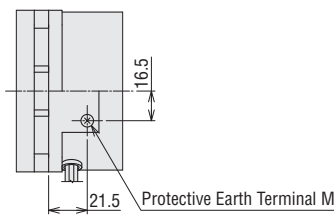
◇ 60 W

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg
DSCI560ECM -□■	5IK60UGVH-ECM	5GVH□B	7.5~18	45	5.3
			25~100	58	
			120~300	64	



Parallel Key (Included)

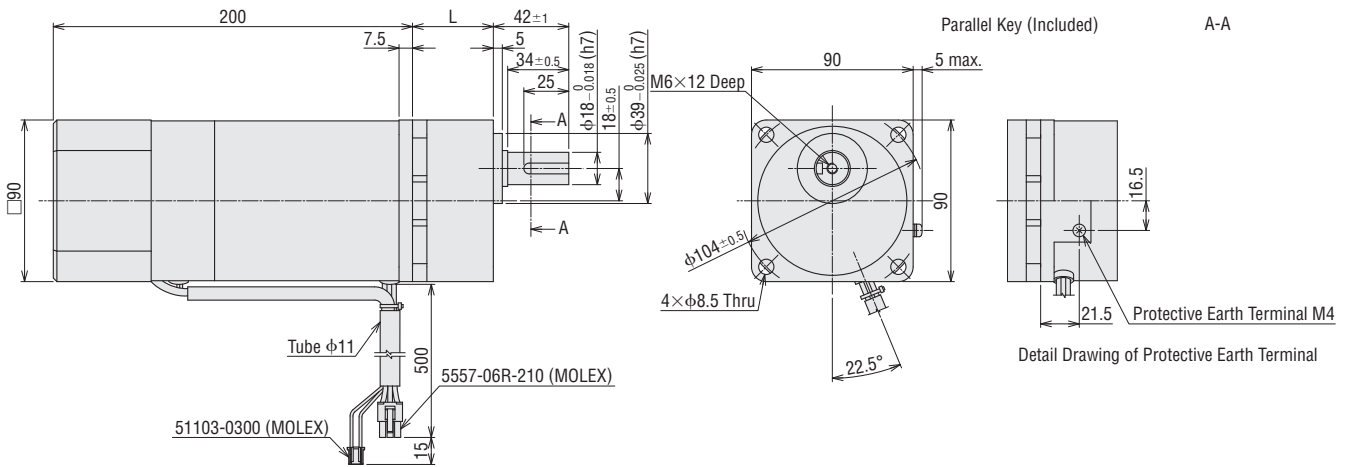
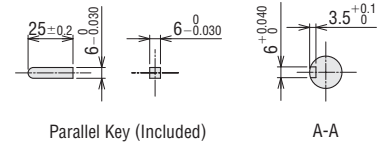
A-A



Detail Drawing of Protective Earth Terminal

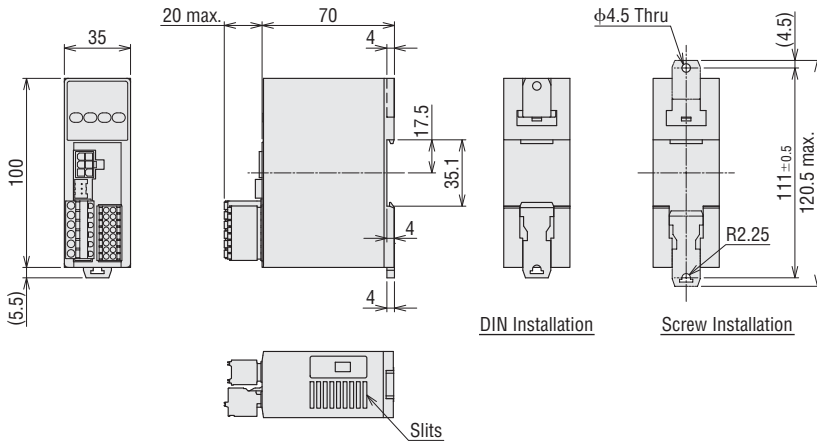
◇ 90 W

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg
DSCI590ECM-□	5IK90UGVR-ECM	5GVR□B	7.5~15	45	5.5
			18~36	58	
			50~180	70	

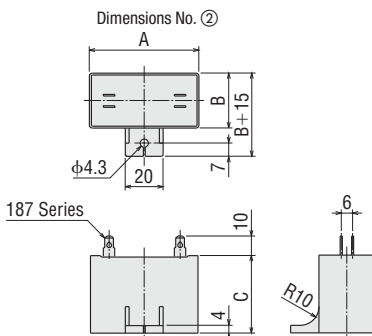
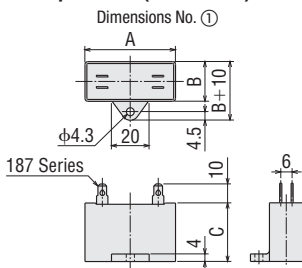


● Speed Controller

DSC-MU
Mass: 0.2 kg



● Capacitor (Included)



● Capacitor Dimensions Unit: mm

Product Name	Capacitor Product Name	A	B	C	Mass g	Dimensions No.
DSCI26ECM-□	CH06BFAUL	31	14.5	23.5	18	①
DSCI315ECM-□	CH10BFAUL	37	18	27	27	
DSCI425ECM-□	CH15BFAUL	38	21	31	37	
DSCI540ECM-□	CH23BFAUL	48	21	31	43	
DSCI560ECM-□	CH30BFAUL	58	21	31	50	
DSCI590ECM-□	CH60BFAUL	58	29	41	92	②

● A capacitor cap is included with the capacitor.

Overview, Product Series

Brushless Motors

AC Input BMU

AC Input BLE2

AC Input BXII

DC Input BLH

AC Speed Control Motors

DSC

US2

Accessories

Installation

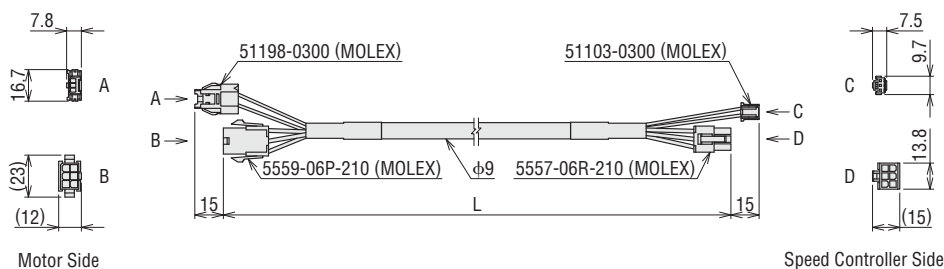
● Connection Cable (Included)

Only for the products including a connection cable.

Cable Length	Length L (m)
1 m	1
2 m	2
3 m	3

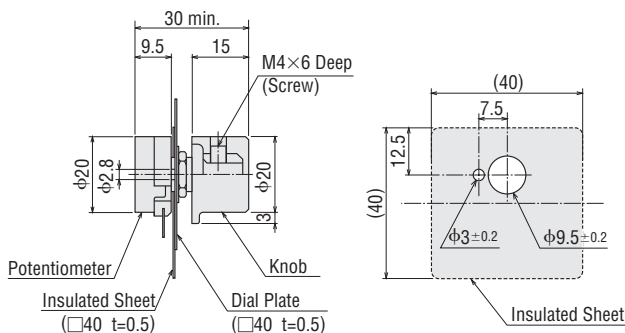
Standard Type
Parallel Shaft/
Round Shaft

Electromagnetic
Brake Type
Parallel Shaft



● External Speed Potentiometer (Included)

Only for the products including an external speed potentiometer.



Recommended thickness of a mounting plate is a maximum of 4.5 mm.

■ List of Motor and Speed Controller Combinations

Output Power	Product Name	Combination Motor Product Name*	Motor Product Name	Gearhead Product Name	Speed Controller Product Name
6 W	DSCI26ECM -□■	2IK6UECM-□	2IK6UGV-ECM	2GV□B	DSC-MU
15 W	DSCI315ECM -□■	3IK1.5UECM-□	3IK1.5UGV-ECM	3GV□B	
25 W	DSCI425ECM -□■	4IK2.5UECM-□	4IK2.5UGV-ECM	4GV□B	
40 W	DSCI540ECM -□■	5IK4.0UECM-□	5IK4.0UGV-ECM	5GV□B	
60 W	DSCI560ECM -□■	5IK6.0UECM-□	5IK6.0UGVH-ECM	5GVH□B	
90 W	DSCI590ECM -□■	5IK9.0UECM-□	5IK9.0UGVR-ECM	5GVR□B	

*Combination motor product names are names of special order products in which motors and gearheads are pre-assembled.

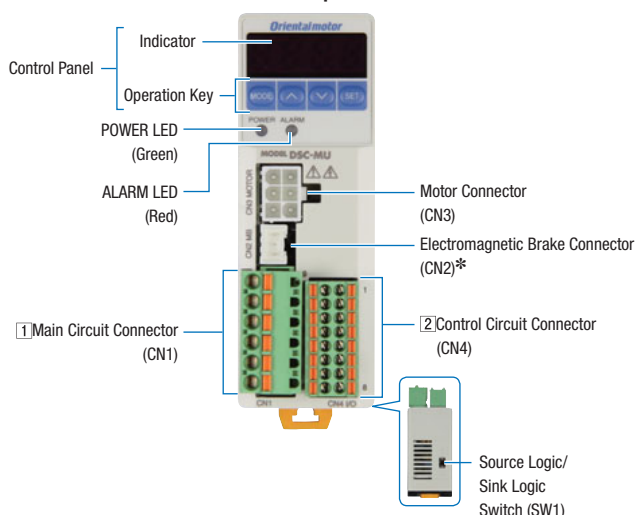
● A number indicating the gear ratio is entered where the box □ is located within the product name.

When the accessory connection cable is supplied, a number indicating the cable **-1** (1 m), **-2** (2 m), **-3** (3 m), is specified in the box ■ in the product name.

When the accessory external speed potentiometer is supplied, **▼** is specified at the end of the product name.

Connection and Operation

Names and Functions of Speed Controller Parts



Name		Overview
Control Panel	Indicator (4 digit LED)	Displays speed, parameters, alarms, etc.
	Operation Key	Switches operating mode, sets operating data and changes parameters.
POWER LED (Green)		Lights when the AC power supply is provided to the speed controller.
ALARM LED (Red)		Lights when an alarm is activated.
Motor Connector (CN3)		Connects to the motor connector.
Electromagnetic Brake Connector (CN2)*		Connects to the electromagnetic brake connector.
Main Circuit Connector (CN1)		Connects to the AC power supply, capacitor and FG.
Control Circuit Connector (CN4)		Connects the DC power supply for control and I/O signals.
Source Logic/Sink Logic Switch		Switches between the source logic and sink logic for the input signal.

*Only the electromagnetic brake type is connected.

1 Main Circuit Connector (CN1)

Pin No.	Contents	Description
1	Capacitor	Connects the capacitor.
2		
3	N.C.	No connection.
4	AC Power Supply	Connects to the live side.
5		Connects to the neutral side.
6	FG	Connects to the ground wire.

2 Control Circuit Connector (CN4)

Pin No.	Signal Name	Function*1	Description
1	+24 V	DC Power Supply for Control	Connects the 24 VDC power supply for control circuit.
2	0 V (GND)		
3	IN0	[FWD]	The motor rotates in the forward direction when "ON." *2
4	IN1	[REV]	The motor rotates in the reverse direction when "ON." *2
5	IN2	[M0]	Selects the operating data.
6	IN3	[M1]	
7	IN4	[ALARM-RESET]	Alarms are canceled.
8	IN5	[FREE]	When the FREE input is set to "ON" during motor operation, the motor will perform a coasting stop. When the FREE input is "ON", the motor will not rotate, even if the FWD input or REV input are set to "ON". For electromagnetic brake type, when the FREE input is "ON", the electromagnetic brake is released.
9	VH	External Speed Setting Input	It is connected when speed is set externally using external speed potentiometer or external DC voltage.
10	VM		
11	VL		
12	N.C.	—	No connection.
13	OUT0+	[SPEED-OUT]	12 pulses are output when the motor output shaft makes one rotation.
14	OUT0-		
15	OUT1+	[ALARM-OUT]	Output when an alarm activates. (Normally closed)
16	OUT1-		

*1 Text inside the [] represents the factory default function assignment. The following signals can be assigned as necessary to 6 input signal terminals (IN0–IN5) and 2 output signal terminals (OUT0, OUT1).

6 of the 7 input signals (FWD, REV, M0, M1, ALARM-RESET, FREE, EXT-ERROR)
2 of the 4 output signals (SPEED-OUT, ALARM-OUT, TH-OUT, WNG)

*2 Rotation direction varies according to the gearhead's gear ratio and the parameter settings.

Overview, Product Series

Brushless Motors

AC Input BMU

AC Input BLE2

AC Input BXII

DC Input BLH

AC Speed Control Motors

DSC

US2

Accessories

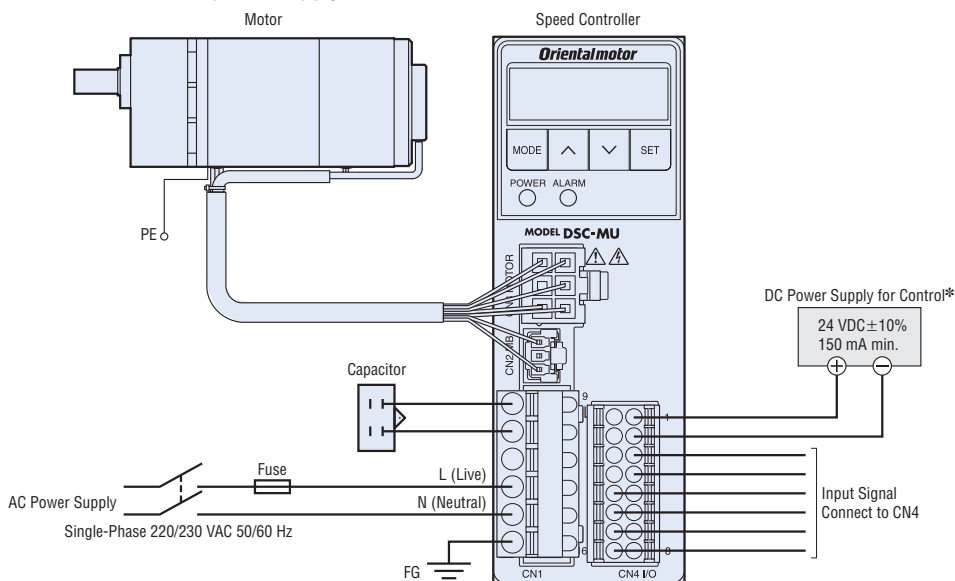
Installation

● Connection Diagram

The figure shows a connection example for the electromagnetic brake type. Always connect the DC power supply for control when operating the motor in addition to the AC power supply.

Standard Type
Parallel Shaft/
Round Shaft

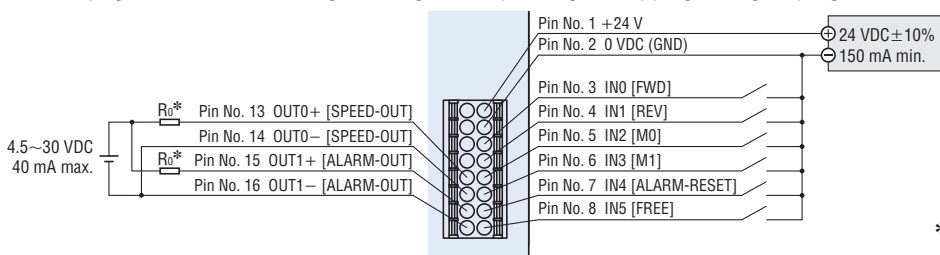
Electromagnetic
Brake Type
Parallel Shaft



*Use a power supply with reinforced insulation on the primary and secondary sides for the DC power supply for control.

◇ Example of I/O Signal (CN4) Connection

The figure shows a connection example when operating with a contact switch, such as switches and relays with sink logic setting. Refer to page D-137 for source logic setting when operating or stopping through a programmable controller.



*Recommend Resistance Value
24 VDC: 680 Ω~4.7 kΩ (2 W) 5 VDC: 150 Ω~1 kΩ (0.5 W)

ⓘ Note

● Connect a limiting resistor R_0 that corresponds to the power supply used, so that the current that flows with the output signals does not exceed 40 mA.

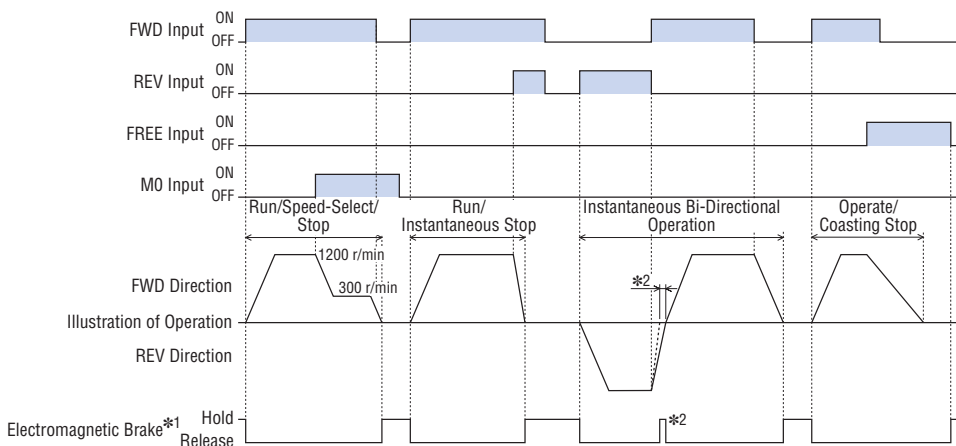
◇ Rating of Fuse

For overcurrent protection, be sure to insert a fuse into the power supply line.

Rating of Fuse	Single-Phase 220/230 VAC	216 Series (Littelfuse, Inc.) 6.3 A or equivalent
----------------	--------------------------	---

● Timing Chart

Operating data No.0 has been set to 1200 r/min and operating data No.1 has been set to 300 r/min.



- After setting the speed, when the FWD or REV input is set to ON, the motor is rotated at the set speed.
- During motor operation, when the signal that is ON (either FWD or REV input) is turned OFF, the motor will perform a deceleration stop within the set deceleration time.
- If the FWD input and REV input are turned ON simultaneously, the motor will stop instantaneously.
- For electromagnetic brake types, the motor stops and the brake is simultaneously activated.

*1 Only for electromagnetic brake type.

*2 Only for electromagnetic brake type. Holds while "deceleration control" parameter is ON, and time lag occurs during motor standstill (approx. 0.1 seconds). Does not hold when "deceleration control" parameter is OFF. There is no time lag, either.

ⓘ Note

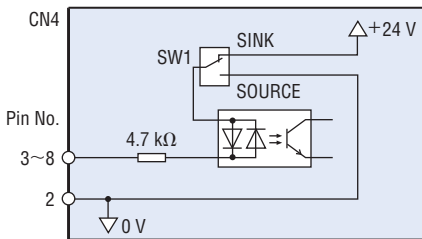
● The duration of ON for each signal must be 10 ms or more.

I/O Signal Circuits

Source logic or sink logic can be selected according to the external control device the customer is using.

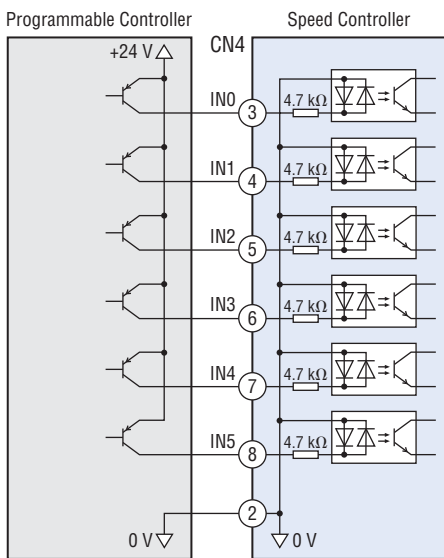
◇ Input Circuit

IN0~IN5

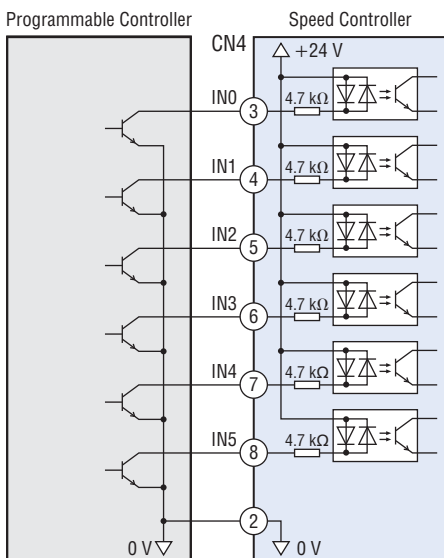


◇ Connection to Programmable Controller

• Source Logic

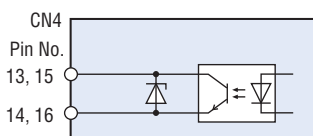


• Sink Logic



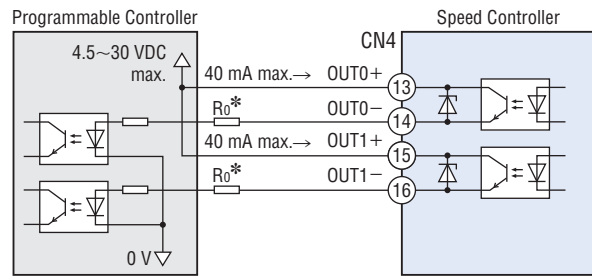
◇ Output Circuit

OUT0, OUT1

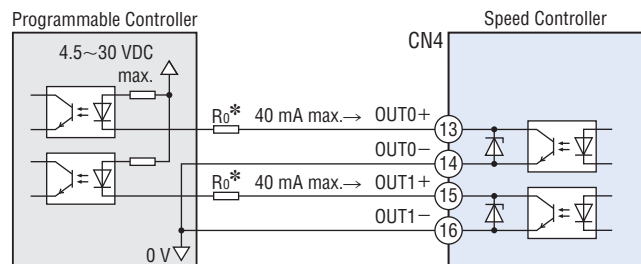


◇ Connection to Programmable Controller

• Source Logic



• Sink Logic



*Recommended Resistance Value

24 VDC: 680 Ω ~ 4.7 kΩ (2 W) 5 VDC: 150 Ω ~ 1 kΩ (0.5 W)

[Note]

● Maintain the current value of OUT0 and OUT1 at 40 mA or less. If this current value is exceeded, connect the limiting resistor Ro.

◇ When an External Control Device with a Built-in Clamp Diode is Used

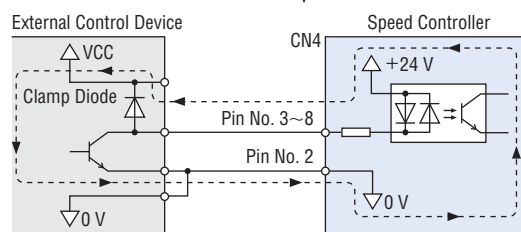
If an external control device with a built-in clamp diode is connected and the external control device is turned off when the speed controller power is on, current may flow in and rotate the motor. Also, depending on the external control device used with the speed controller, the motor may rotate even when the power supply is set to ON and OFF simultaneously. Use the following procedure to turn the power ON or OFF.

When turning the power OFF:

Speed controller → External control device

When turning the power ON:

External control device → Speed controller



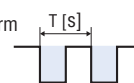
◇ Speed Output (SPEED-OUT)

Pulse signals of 12 pulses are output at every rotation of the motor output shaft in synchronization with the motor operation. If the speed output frequency is measured, the motor speed can be calculated.

$$\text{Motor Shaft Speed [r/min]} = \frac{\text{Speed Output Frequency [Hz]} \times 60}{12}$$

$$\text{Speed Output Frequency [Hz]} = \frac{1}{T [\text{s}]}$$

Speed Output Waveform



Overview, Product Series

Brushless Motors

AC Input BMU

AC Input BLE2

AC Input BXII

DC Input BLH

AC Speed Control Motors

DSC

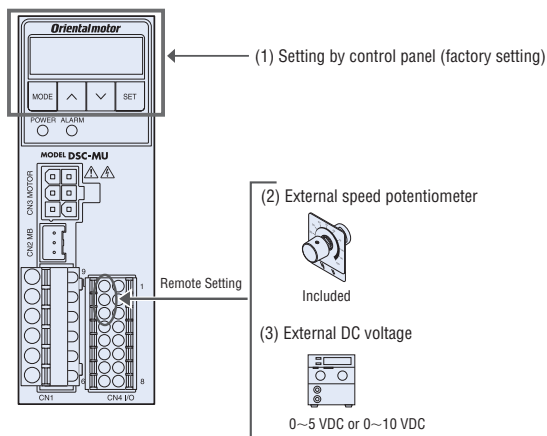
US2

Accessories

Installation

● Speed Setting Method

The following 3 methods for setting speed can be used.



◇ Setting by Control Panel

Up to 4 operating data can be set.

By switching the M0 and M1 inputs between ON and OFF, the pattern can be selected and the motor will operate.

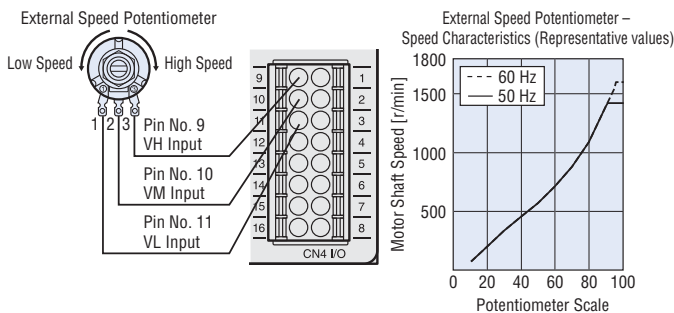
Operating Data No.	M1	M0	Contents
0	OFF	OFF	Setting by control panel/remote setting*
1	OFF	ON	Setting by control panel
2	ON	OFF	
3	ON	ON	

*When the "External speed command input" parameter is set to "ON (enabled)" (Initial value: OFF), the speed can be set using the external speed potentiometer and external DC voltage.

◇ Setting by External Speed Potentiometer (Included)

Connect the external speed potentiometer to CN4.

"External speed command voltage selection" parameter setting: "0-5" (Initial value)



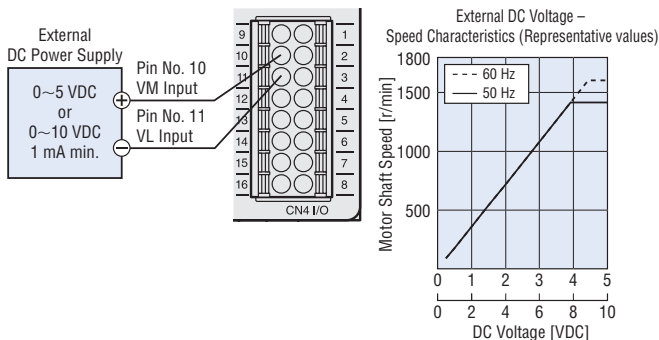
◇ Setting by External DC Voltage

Connect the external DC power supply (0~5 VDC or 0~10 VDC) to CN4.

"External speed command voltage selection" parameter setting:

0~5 VDC "0-5" (Initial value)

0~10 VDC "0-10"



Note

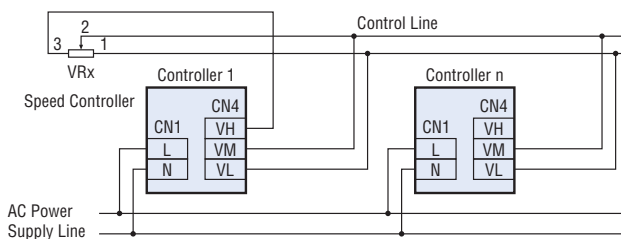
● Ensure that the external DC voltage is 10 VDC or less. When connecting the external DC voltage, ensure that the polarity is correct. Otherwise, it may damage the speed controller.

● Parallel-Motor Control

Multiple motors can be operated at the same speed using 1 external speed potentiometer or external DC voltage.

◇ Using an External Speed Potentiometer

Parallel-motor operation using the external speed potentiometer (VRx) should be performed with a maximum of 20 speed controllers.



● The Calculation Method of the Resistance Value (VRx) when the Number of Speed Controllers Connected is n

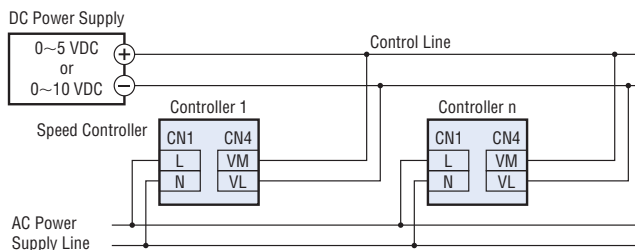
Resistance value (VRx) = 20/n (kΩ), permissible loss = n/4 (W)

Example: When connecting 2 speed controllers

Resistance value = 20/2 = 10 (kΩ), permissible loss = 2/4 = 1/2 (W)

◇ Using External DC Voltage

The number of connected units will be limited depending on the current capacity of the external DC power supply.



● The Calculation Method of the Current Capacity of the External DC Power Supply (I) when the Number of Speed Controllers Connected is n

Current capacity (I) = 1 × n (mA)

Example: When connecting 2 speed controllers

Current capacity (I) = 1 × 2 = 2 (mA)

● Repetitive Operation Cycle

When the motor is operated repeatedly in short cycles, use the cycles below as a reference, and ensure that the motor's external temperature is at 90°C or less.

Instantaneous Stop	6~40 W	When operation and instantaneous stops are repeated 2 seconds min., operating duty 50% max. (Example: 1 second operating, 1 second stopped)
	60 W, 90 W	When operation and instantaneous stops are repeated 4 seconds min., operating duty 50% max. (Example: 2 seconds operating, 2 seconds stopped)
Instantaneous Bi-Directional Operation	6~40 W	When rotation direction is repeatedly switched during operation Switch once every 2 seconds min.
	60 W, 90 W	When rotation direction is repeatedly switched during operation Switch once every 4 seconds min.

- On the electromagnetic brake type, continuous operation conditions occur when the "deceleration control" parameter is set to ON. Check the electromagnetic brake type "Common Specifications - Permissible Continuous Operation Time While Deceleration Control is ON" (→ Page D-127)

● Brake Current

When performing an instantaneous stop, bi-directional operation or vertical operation*, the large brake current flows for approximately 0.4 seconds on a half-wave rectified AC power supply line.

When performing these kinds of operations, select the equipment breaker and AC power supply capacitance by referring to the table's braking current (peak value).

Motor Output Power	Braking Current (Peak value)
	Single-Phase 220/230 VAC
6 W	1 A
15 W	3 A
25 W	4 A
40 W	7 A
60 W	10 A
90 W	13 A

*Only for electromagnetic brake type.

Overview,
Product
Series

Brushless
Motors

AC Input
BMU

AC Input
BLE2

AC Input
BXII

DC Input
BLH

AC Speed
Control
Motors

DSC

US2

Accessories

Installation