



MICRO STEP CATALOG 2024

STEPING
MOTOR
DRIVER
BOARD

MICROSTEP Co.,Ltd

1-3-40 Senzui, Asaka-shi
Saitama 351-0024, Japan
URL : <https://www.microstep.co.jp>
Mail : info@microstep.co.jp

Pioneer in the Design, Development, Manufacturing & Sales of 5 Phase Micro-Stepping Driver.

MICROSTEP is the first stepping motor driver manufacturer developed and introduced "Micro Stepping Technology" in Japan.

Today, we committed ourselves in the 5 Phase Stepping Motor Drivers and by direct sales and marketing, we provide products reflecting true needs of users. In 2002, we developed and introduced Multi-Axis Single Board Drivers and other Space-saving Drivers at very Competitive Price to the market. In 2003, we also introduced the first driver with DC5V power source in the industry and received high evaluation from the users.

Our high technology in developing Original ICs allowed us to create not only the products with high-performance and high-functionality, but also the various products with essential functions to meet with needs of cost reduction from various users.

Please contact us if there is any need of custom made drivers and its applied OEM products.



MICROSTEP Product lineup

| Model | Power Source | Drive Method | Drive Current (A/Phase) | UL/CE | Feature | Page |
|--------------|--------------|----------------|-------------------------|-------|-----------------------------------|------|
| MC-S0514L-HS | DC24V | Micro-Stepping | 0.35A/0.75A/1.4A | CE | High Speed High Torque | 6 |
| MC-S0514-L | | | | CE | Single axis, Small Sized Low Cost | 8 |
| MC-S0514-2L | | | | CE | 2 axis, Small Sized Low Cost | 10 |
| MC-S0514-3L | | | | CE | 3 axis, Small Sized Low Cost | 10 |
| MC-S0514-4L | | | | CE | 4 axis, Small Sized Low Cost | 12 |
| MC-S0524-L | | Full/Half Step | 1.2A/1.8A/2.4A | CE | High Performance Model | 14 |
| MC-S5035 | | | 0.35A | CE | Thin-type | 16 |
| MC-S0514ZU | | | 0.35A~1.4A | CE | High Performance Model | 18 |
| MC-S0528 | | | 0.75A~2.8A | CE | Small Sized | 20 |
| MC-S3ML | | | 0.12A~0.35A | CE | Small Sized | 22 |
| MC-S5ML | | | 0.5A~1.4A | CE | Thin-type | 24 |
| MC-S5G | | | 1.0~2.8A | — | Small Sized | 26 |

| Model | Power Source | Drive Method | Drive Current (A/Phase) | UL/CE | Feature | Page |
|------------------------|-----------------------------------------------------------------------------------------------|----------------|-------------------------|-------|------------------------|------|
| MC-S5514T* | AC100V ~115V | Micro-Stepping | 0.35A~1.4A | CE | Terminal Block Type | 28 |
| MC-S5514P* | | | | CE | Connector Type | 30 |
| MC-S7514PCL* | AC100V ~230V | | 1.0A~2.8A | UL/CE | Connector Type | 32 |
| MC-S7528P* | AC200V | | | — | Connector Type | 34 |
| MC-0503* | DC5V | Micro-Stepping | 0.25A | — | Constant Voltage Drive | 36 |
| MC-5M | DC24V | Full/Half Step | 0.5A~1.4A | UL/CE | Small Sized | 38 |
| MC-5528P* | AC100V | Micro-Stepping | 1.0A~2.8A | — | Connector Type | 40 |
| 5 Phase Stepping Motor | | | | | | 42 |
| Torque Characteristics | MC-S0514L-HS, MC-S0514-L, MC-S5035, MC-S0528, MC-S3ML, MC-S5ML, MC-S5G, MC-S7514PCL, MC-5528P | | | | | 44 |
| Wire Harness | | | | | | 50 |

*These drivers are also available with "-3 Series" which provides Micro Stepping Resolution of 1, 2, 3, 6, 12, 18, 24, 32, 36, 48, 60, 72, 120, 160, 180, 240.(Model Nos. with a suffix "-3") Please contact us for details.
"-3 Series" are not applied for UL and CE.

"S" Series

A Proposition from Microstep
brings you every possibility.

P6~

- MC-S0514L-HS
- MC-S0514-L
- MC-S0514-2L
- MC-S0514-3L
- MC-S0514-4L
- MC-S0524-L
- MC-S5035
- MC-S0514ZU
- MC-S0528
- MC-S3ML
- MC-S5ML
- MC-S5G
- MC-S5514T
- MC-S5514P
- MC-S7514PCL
- MC-S7528P



While having the same performance and quality with the existing models, "S series" 5 phase stepping motor drivers are designed for a simple and easy to install in your equipment. Also, our high cost-performance driver contributes to downsizing of your equipment by its Space Saving and Low Cost design. "S" series from Microstep is the standard model of driver going forward.

Standard



S series

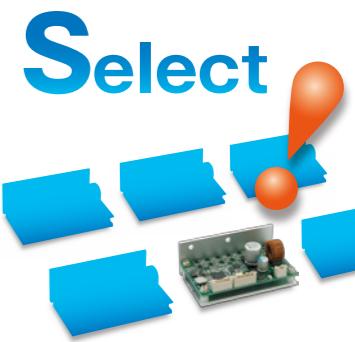
While having the same performance and quality with existing models such as MC-0514-L, it accomplished Compact and Low Cost design to meet with your needs. "S series" developed by our brand-new design is the new industrial standard going forward.

Small & Low cost



Area Ratio,
Reduced by
40%

Achieved 40% smaller area by its brand-new design. While various equipment is making progress toward higher performance and compact design, "S series" provides solution to users by its space saving and high cost-performance.



Among the various choices in 5 phase stepping motor drivers, the Concept of "S" is the Keyword to realize High Cost-Performance for the on-board equipment.

The Evolution called "V"

Introducing "V-Up Drivers"
from the S series.

P6·7

- MC-S0514L-HS



STEPPING MOTOR DRIVER "V UP DRIVER"

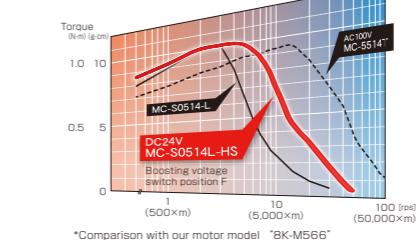
Our "V-Up 5 Phase Stepping Motor Drivers" are now renewed as "S" series. It allows to achieve High Torque in the High Speed Range without increasing the input voltage. It also contributes significant cost reduction and downsizing of your equipment. Please do look forward the performance of the new "V" from Microstep.

Voltage



By increasing its capacity of DC24V power supply, it allows approx. 1.5 times drastic increase in the motor torque without increasing input voltage. (compared to our conventional drivers.)

Velocity



*Comparison with our motor model "BK-M566".

*m = Resolution in Micro Step (ex. m=1 : Full Step / m=2 : Half Step)

V-Up Drivers offers stable High Torque in High Speed Range. It also provides a significant Cost Reduction as an alternative driver to your existing machine utilizing AC Powered Driver.

Value & Small



Area Ratio,
Reduced by
40%

Conventional V-Up Drivers are now renewed as model "MC-S0514L-HS" from S series. The Resized Driver contributes to your machine to be more Compact & Light Weighted and it provides a true value in performance.

5 Phase Stepping Motor Driver

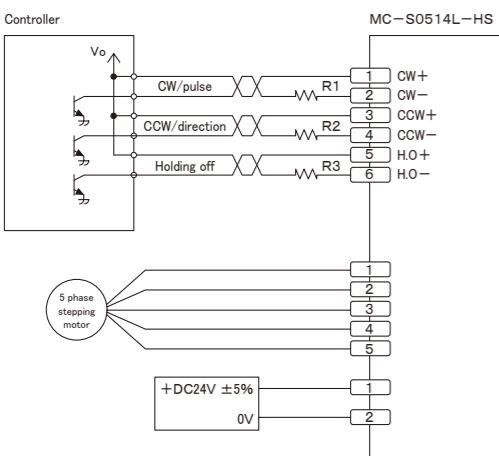
MC-S0514L-HS



SPECIFICATION

| | |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name | 5 phase stepping motor driver |
| Model | MC-S0514L-HS |
| Driving method | Micro step |
| Input power | DC24V ±5% 6A Max. |
| Drive current | 0.35A/phase , 0.75A/phase , 1.4A/phase |
| Division | 2 series : 1, 2, 4, 5, 8, 10, 16, 20, 25, 40, 50, 80, 100, 125, 200, 250 3 series : 1, 2, 3, 6, 12, 18, 24, 32, 36, 48, 60, 72, 120, 160, 180, 240 |
| Maximum frequency | 500 kpps |
| Input signal | Optical-isolator input [1]:3~5V, [0]:-3~0.5V Input resistance CW, CCW:220Ω H.O.:220Ω |
| Function | Pulse input mode selector , Micro step angle select , Automatic current reduction |
| Operating temperature range | 0~40°C |
| Operating humidity range | 0~85% |
| Weight | 120g |

SAMPLE WIRING DIAGRAM



FEATURE

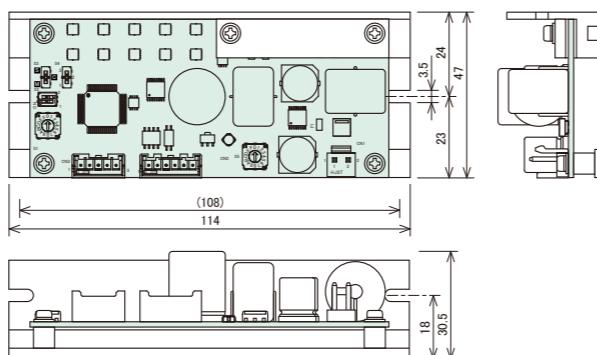
V-UP driver offers High Speed & High Torque.

Thanks to "Voltage Boosting Circuit" that we newly developed, V-UP driver provides high speed and High Torque.

- More low-priced and compact size micro step driver.
- Boosting Voltage is selectable from 16 drive voltages.
- Drive Current : 0.35A/phase, 0.75A/phase, 1.4A/phase.
- Low vibration drive (Full or Half step).
- Optical-isolator input.
- Automatic current reduction.
- Small size.

*Optional Parts : Wire assembled connector ▶Page 50

DIMENSIONS (unit:mm)



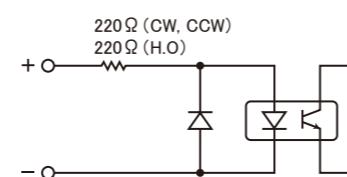
MOTOR

- 5/10 lead 5-Phase stepping motors such as Tamagawa-seiki or Oriental-motor.

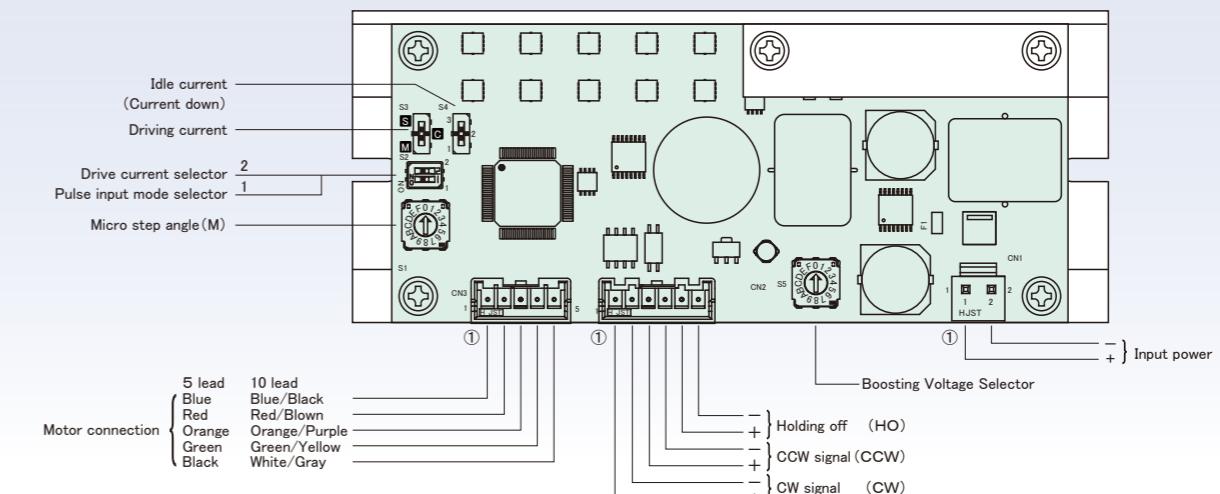
See table below for the pin no. of the connector and color of motor leads.

| Connector No. | 5 lead | 10 lead |
|---------------|--------|---------------|
| 1 | Blue | Blue/Black |
| 2 | Red | Red/Blown |
| 3 | Orange | Orange/Purple |
| 4 | Green | Green/Yellow |
| 5 | Black | White/Gray |

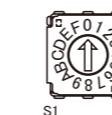
INPUT CIRCUIT



NAME AND FUNCTION



SETTING MICROSTEP RESOLUTION



Resolution for 2 series : When DIP Switch SW2 is OFF.

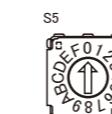
| SW No. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|----------|----|-----|-----|-----|-----|----|----|----|----|----|
| Division | 1 | 2 | 4 | 5 | 8 | 10 | 20 | 40 | 80 | 16 |
| A | B | C | D | E | F | | | | | |
| 25 | 50 | 100 | 125 | 200 | 250 | | | | | |

$$\text{Micro Step Angle} = \frac{\text{Base Step Angle}}{\text{Division}}$$

Resolution for 3 series : When DIP Switch SW2 is ON.

| SW No. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|----------|----|-----|-----|-----|-----|----|----|----|----|----|
| Division | 1 | 2 | 3 | 6 | 12 | 18 | 24 | 32 | 36 | 48 |
| A | B | C | D | E | F | | | | | |
| 60 | 72 | 120 | 160 | 180 | 240 | | | | | |

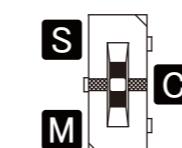
SETTING THE BOOSTING VOLTAGE



Select and set the boosting voltage from the table below.

| SW No. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|------------------|----|----|----|----|----|----|----|----|----|----|
| Drive Voltage(V) | 24 | 25 | 27 | 28 | 30 | 32 | 33 | 35 | 36 | 37 |
| A | B | C | D | E | F | | | | | |
| 39 | 40 | 42 | 43 | 45 | 47 | | | | | |

SETTING DRIVE CURRENT



- DIP Switch "S3" :
for 0.75A/phase : Switch to "S".
for 0.35A/phase : Switch to "C" (Center).
for 1.4A/phase : Switch to "M".

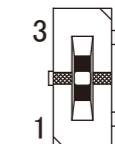
DIP SW FUNCTION



| No. | Mode | ON | OFF |
|-----|------------------------|-----------|-----------|
| 1 | Pulse mode | One pulse | Two pulse |
| 2 | Drive current selector | 3 series | 2 series |

SETTING IDLE CURRENT

(CURRENT DOWN)



- 25% (Position 3)
- 75% (Position 2, Center)
- 50% (Position 1)

*Figures are of ratios to the drive current.

5 Phase Stepping Motor Driver

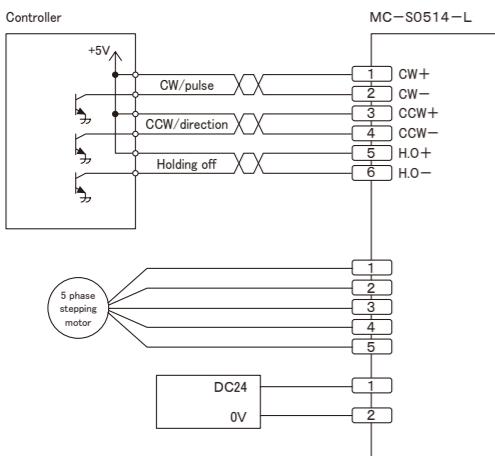
MC-S0514-L



SPECIFICATION

| | |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name | 5 phase stepping motor driver |
| Model | MC-S0514-L |
| Driving method | Micro step |
| Input power | DC24V ±5% 3A Max. |
| Drive current | 0.35A/phase, 0.75A/phase, 1.4A/phase |
| Division | 2 series : 1, 2, 4, 5, 8, 10, 16, 20, 25, 40, 50, 80, 100, 125, 200, 250 3 series : 1, 2, 3, 6, 12, 18, 24, 32, 36, 48, 60, 72, 120, 160, 180, 240 |
| Maximum frequency | 500 kpps |
| Input signal | Optical-isolator input [1]:3~5V, [0]:-3~0.5V Input resistance CW, CCW:220Ω H.O:220Ω |
| Function | Pulse input mode selector, Micro step angle select, Automatic current reduction |
| Operating temperature range | 0~40°C |
| Operating humidity range | 0~85% |
| Weight | 81g (type 2) |

SAMPLE WIRING DIAGRAM



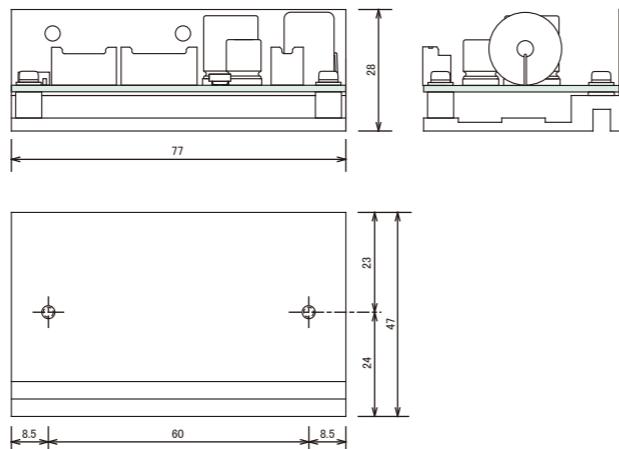
FEATURE

- More low-priced and compact size micro step driver.
- Drive Current : 0.35A/phase, 0.75A/phase, 1.4A/phase.
- Low vibration drive(Full or Half step).
- Optical-isolator input.
- Automatic current reduction.
- Small size.

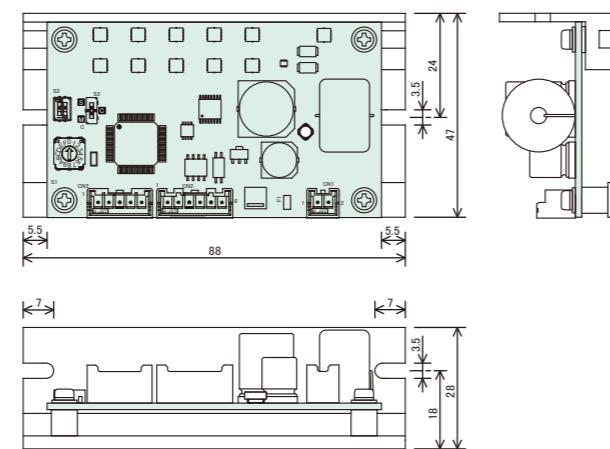
*Optional Parts : Wire assembled connector ▶Page 50

DIMENSIONS (unit:mm)

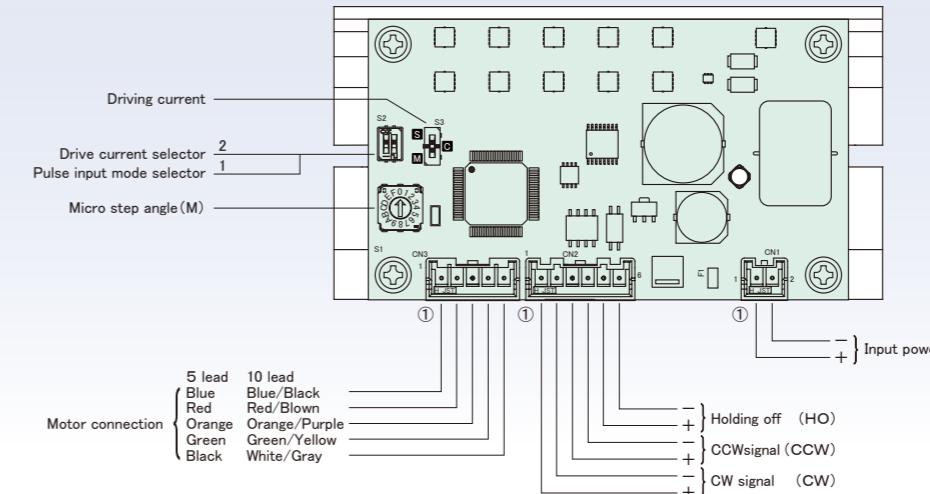
Type 1



Type 2



NAME AND FUNCTION



SETTING MICROSTEP RESOLUTION



Resolution for 2 series : When DIP Switch SW1 is OFF.

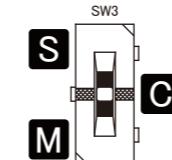
| SW No. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|----------|----|-----|-----|-----|-----|----|----|----|----|----|
| Division | 1 | 2 | 4 | 5 | 8 | 10 | 20 | 40 | 80 | 16 |
| A | B | C | D | E | F | | | | | |
| 25 | 50 | 100 | 125 | 200 | 250 | | | | | |

$$\text{Micro Step Angle} = \frac{\text{Base Step Angle}}{\text{Division}}$$

Resolution for 3 series : When DIP Switch SW1 is ON.

| SW No. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|----------|----|-----|-----|-----|-----|----|----|----|----|----|
| Division | 1 | 2 | 3 | 6 | 12 | 18 | 24 | 32 | 36 | 48 |
| A | B | C | D | E | F | | | | | |
| 60 | 72 | 120 | 160 | 180 | 240 | | | | | |

SETTING DRIVE CURRENT



DIP Switch "S3"

- for 0.75A/phase : Switch to "S".
- for 0.35A/phase : Switch to "C"(Center).
- for 1.4A/phase : Switch to "M".

*Idle current is fixed by 50% of setting and the drive currents.

DIP SW FUNCTION



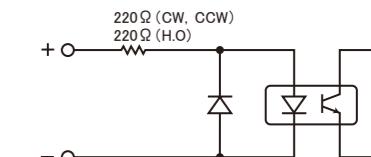
| No. | Mode | ON | OFF |
|-----|------------------------|-----------|-----------|
| 1 | Pulse mode | One pulse | Two pulse |
| 2 | Drive current selector | 3 series | 2 series |

MOTOR

- 5/10 lead 5-Phase stepping motors such as Tamagawa-seiki or Oriental-motor.

See table below for the pin no. of the connector and color of motor leads.

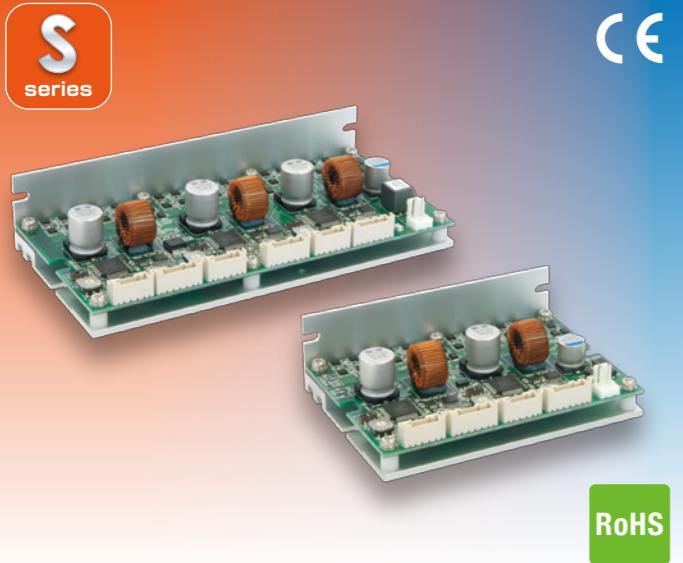
INPUT CIRCUIT



| Connector No. | 5 lead | 10 lead |
|---------------|--------|---------------|
| 1 | Blue | Blue/Black |
| 2 | Red | Red/Blown |
| 3 | Orange | Orange/Purple |
| 4 | Green | Green/Yellow |
| 5 | Black | White/Gray |

2 axis/3 axis One Board 5 phase Microstep Driver

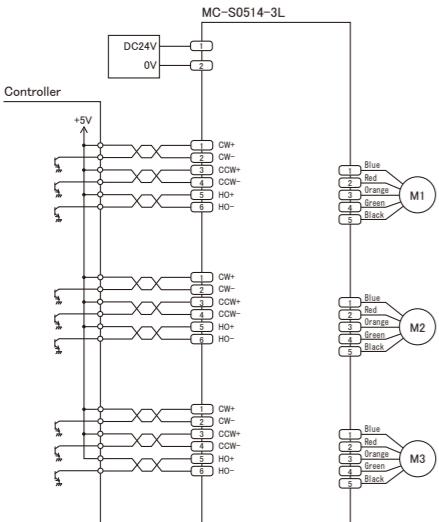
MC-S0514-2L/S0514-3L



SPECIFICATION

| | | |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| Name | 5 phase stepping motor driver | |
| Model | MC-S0514-2L | MC-S0514-3L |
| Driving method | Micro step | |
| Input power | DC24V ±5% 6A Max. | DC24V ±5% 8A Max. |
| Drive current | 0.35A/phase , 0.75A/phase , 1.4A/phase | |
| Division | 2 series : 1, 2, 4, 5, 8, 10, 16, 20, 25, 40, 50, 80, 100, 125, 200, 250 3 series : 1, 2, 3, 6, 12, 18, 24, 32, 36, 48, 60, 72, 120, 160, 180, 240 | |
| Maximum frequency | 500 kpps | |
| Input signal | Optical-isolator input [1]:3~5V, [0]:-3~0.5V Input resistance CW, CCW:220Ω H.O:220Ω | |
| Function | Pulse input mode selector , Micro step angle select , Automatic current reduction | |
| Operating temperature range | 0~40°C | |
| Operating humidity range | 0~85% | |
| Weight | 145g | 220g |

SAMPLE WIRING DIAGRAM

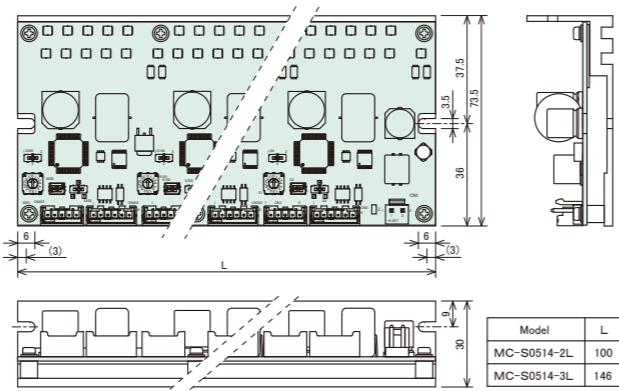


FEATURE

- More low-priced micro step driver for 2 or 3 axes.
- Drive Current : 0.35A/phase, 0.75A/phase, 1.4A/phase.
- Low vibration drive(Full or Half step).
- Optical-isolator input.
- Automatic current reduction.
- Small size.

*Optional Parts : Wire assembled conector ▶Page 50

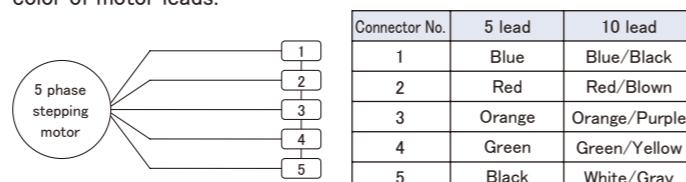
DIMENSIONS (unit:mm)



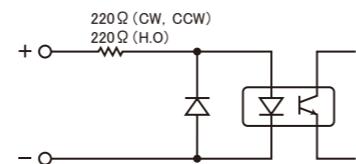
MOTOR

- 5/10 lead 5-Phase stepping motors such as Tamagawa-seiki or Oriental-motor.

See table below for the pin no. of the connector and color of motor leads.

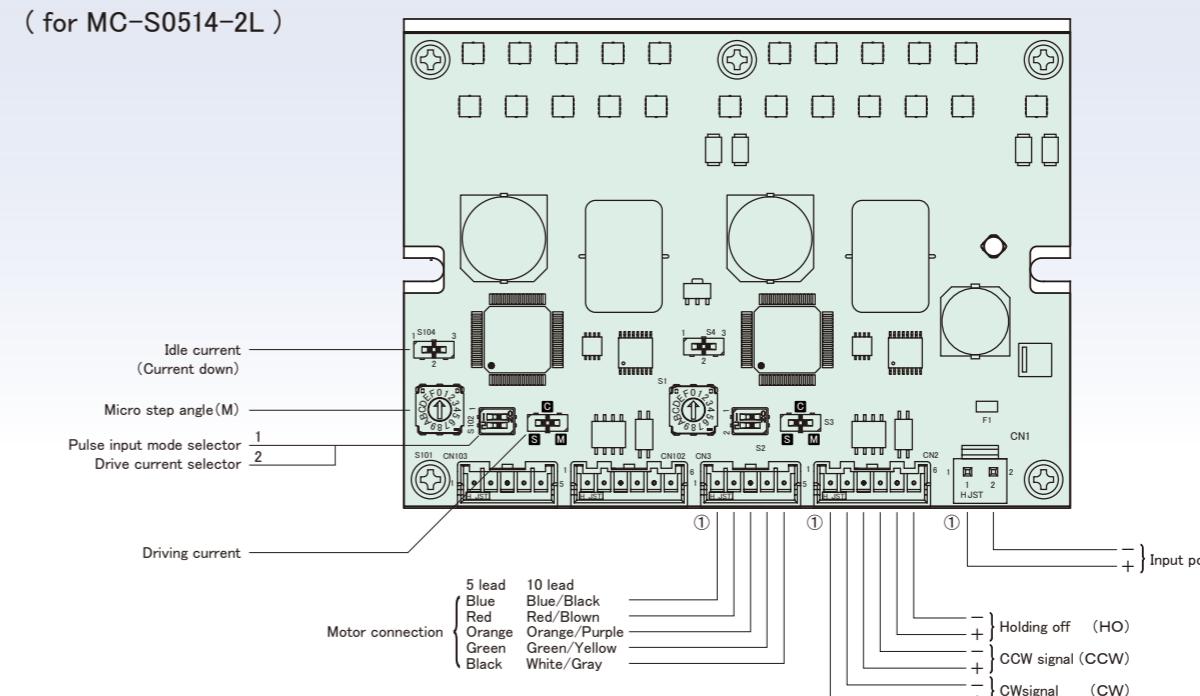


INPUT CIRCUIT



NAME AND FUNCTION

(for MC-S0514-2L)



SETTING MICROSTEP RESOLUTION



Resolution for 2 series : When DIP Switch SW2 is OFF.

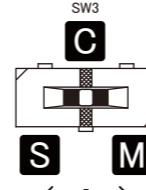
| SW No. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|----------|----|-----|-----|-----|-----|----|----|----|----|----|
| Division | 1 | 2 | 4 | 5 | 8 | 10 | 20 | 40 | 80 | 16 |
| A | B | C | D | E | F | | | | | |
| 25 | 50 | 100 | 125 | 200 | 250 | | | | | |

Micro Step Angle = $\frac{\text{Base Step Angle}}{\text{Division}}$

Resolution for 3 series : When DIP Switch SW2 is ON.

| SW No. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|----------|----|-----|-----|-----|-----|----|----|----|----|----|
| Division | 1 | 2 | 3 | 6 | 12 | 18 | 24 | 32 | 36 | 48 |
| A | B | C | D | E | F | | | | | |
| 60 | 72 | 120 | 160 | 180 | 240 | | | | | |

SETTING DRIVE CURRENT



DIP Switch "S3"

for 0.75A/phase : Switch to "S".

for 0.35A/phase : Switch to "C"(Center).

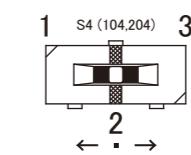
for 1.4A/phase : Switch to "M".

DIP SW FUNCTION



| No. | Mode | ON | OFF |
|-----|------------------------|-----------|-----------|
| 1 | Pulse mode | One pulse | Two pulse |
| 2 | Drive current selector | 3 series | 2 series |

SETTING IDLE CURRENT (CURRENT DOWN)



50% (Position 1)

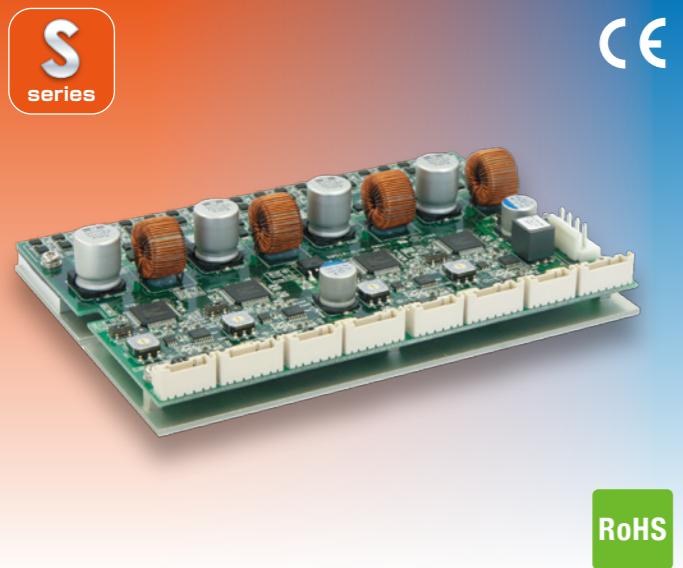
75% (Position 2, Center)

25% (Position 3)

*Figures are of ratios to the drive current.

4 axis One Board 5 phase Microstep Driver

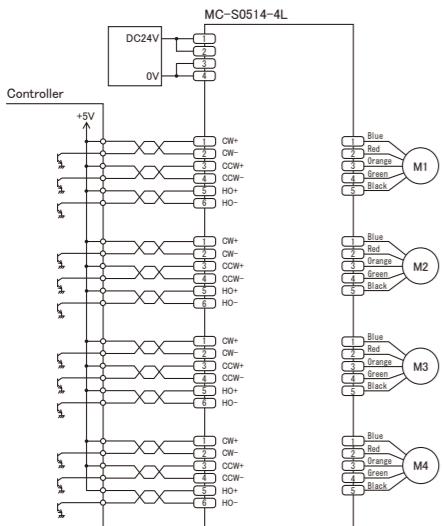
MC-S0514-4L



SPECIFICATION

| | |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name | 5 phase stepping motor driver |
| Model | MC-S0514-4L |
| Driving method | Micro step |
| Input power | DC24V ±5% 10A Max. |
| Drive current | 0.35A/phase, 0.75A/phase, 1.4A/phase |
| Division | 2 series : 1, 2, 4, 5, 8, 10, 16, 20, 25, 40, 50, 80, 100, 125, 200, 250 3 series : 1, 2, 3, 6, 12, 18, 24, 32, 36, 48, 60, 72, 120, 160, 180, 240 |
| Maximum frequency | 500 kpps |
| Input signal | Optical-isolator input [1]:3~5V, [0]:-3~0.5V Input resistance CW, CCW:220Ω H.O:220Ω |
| Function | Pulse input mode selector, Micro step angle select, Automatic current reduction |
| Operating temperature range | 0~40°C |
| Operating humidity range | 0~85% |
| Weight | 275g |

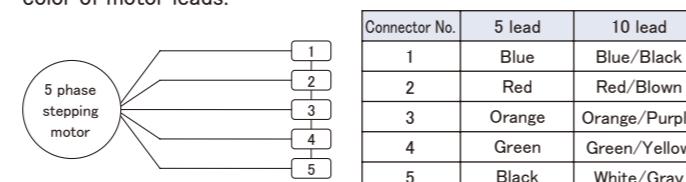
SAMPLE WIRING DIAGRAM



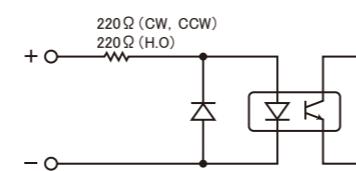
MOTOR

- 5/10 lead 5-Phase stepping motors such as Tamagawa-seiki or Oriental-motor.

See table below for the pin no. of the connector and color of motor leads.



INPUT CIRCUIT

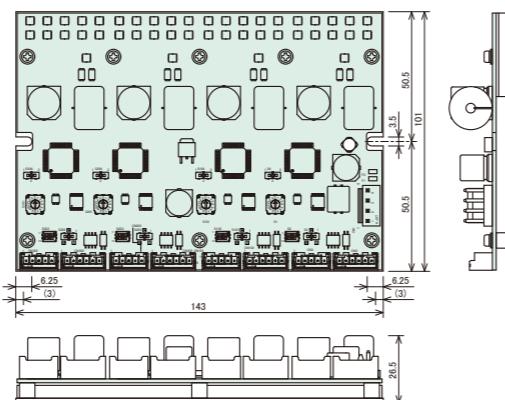


FEATURE

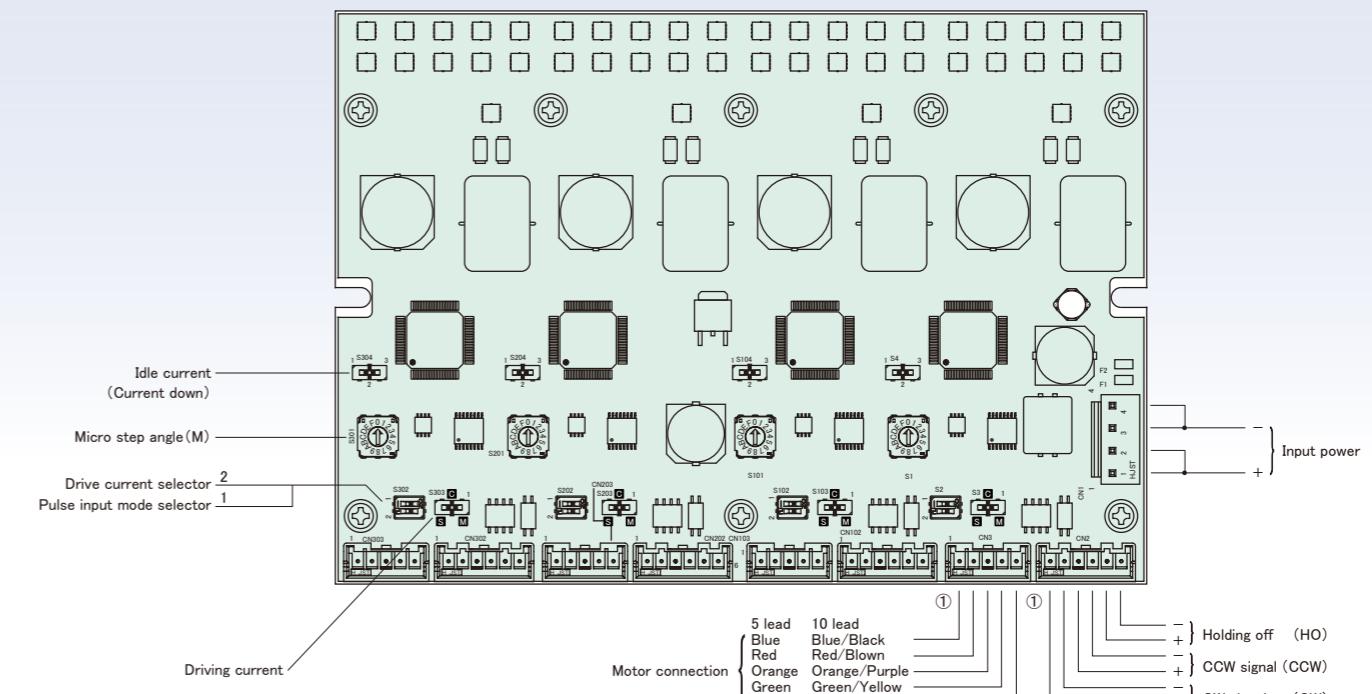
- More low-priced micro step driver for 4 axes.
- Drive Current : 0.35A/phase, 0.75A/phase, 1.4A/phase.
- Low vibration drive(Full or Half step).
- Optical-isolator input.
- Automatic current reduction.
- Small size.

*Optional Parts : Wire assembled conector ▶Page 50

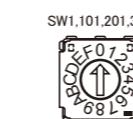
DIMENSIONS (unit:mm)



NAME AND FUNCTION



SETTING MICROSTEP RESOLUTION



Resolution for 2 series : When DIP Switch SW2 is OFF.

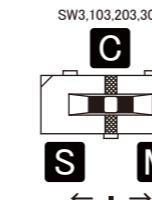
| SW No. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|----------|----|-----|-----|-----|-----|----|----|----|----|----|
| Division | 1 | 2 | 4 | 5 | 8 | 10 | 20 | 40 | 80 | 16 |
| | A | B | C | D | E | F | | | | |
| 25 | 50 | 100 | 125 | 200 | 250 | | | | | |

Micro Step Angle = $\frac{\text{Base Step Angle}}{\text{Division}}$

Resolution for 3 series : When DIP Switch SW2 is ON.

| SW No. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|----------|----|-----|-----|-----|-----|----|----|----|----|----|
| Division | 1 | 2 | 3 | 6 | 12 | 18 | 24 | 32 | 36 | 48 |
| | A | B | C | D | E | F | | | | |
| 60 | 72 | 120 | 160 | 180 | 240 | | | | | |

SETTING DRIVE CURRENT



DIP Switch "S3"

for 0.75A/phase : Switch to "S".

for 0.35A/phase : Switch to "C"(Center).

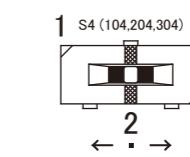
for 1.4A/phase : Switch to "M".

DIP SW FUNCTION



| No. | Mode | ON | OFF |
|-----|------------------------|-----------|-----------|
| 1 | Pulse mode | One pulse | Two pulse |
| 2 | Drive current selector | 3 series | 2 series |

SETTING IDLE CURRENT (CURRENT DOWN)



50% (Position 1)

75% (Position 2, Center)

25% (Position 3)

*Figures are of ratios to the drive current.

5 Phase Stepping Motor Driver

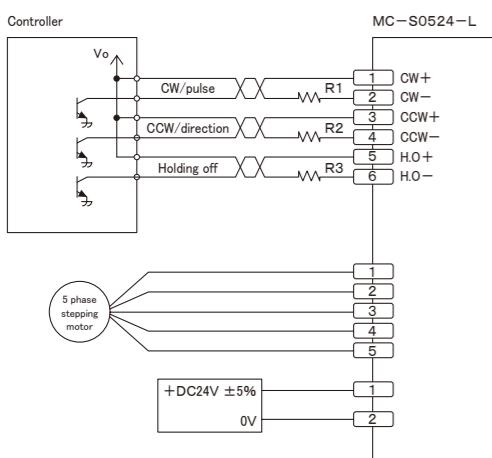
MC-S0524-L



SPECIFICATION

| | |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name | 5 phase stepping motor driver |
| Model | MC-S0524-L |
| Driving method | Micro step |
| Input power | DC24V ±5% 5A Max. |
| Drive current | 1.2A/phase , 1.8A/phase , 2.4A/phase Switching |
| Division | 2 series : 1, 2, 4, 5, 8, 10, 16, 20, 25, 40, 50, 80, 100, 125, 200, 250 3 series : 1, 2, 3, 6, 12, 18, 24, 32, 36, 48, 60, 72, 120, 160, 180, 240 |
| Maximum frequency | 500 kpps |
| Input signal | Optical-isolator input [1]:3~5V, [0]:-3~0.5V Input resistance CW, CCW:220Ω H.O.:220Ω |
| Function | Pulse input mode selector , Micro step angle select , Automatic current reduction |
| Operating temperature range | 0~40°C |
| Operating humidity range | 0~85% |
| Weight | 115g |

SAMPLE WIRING DIAGRAM

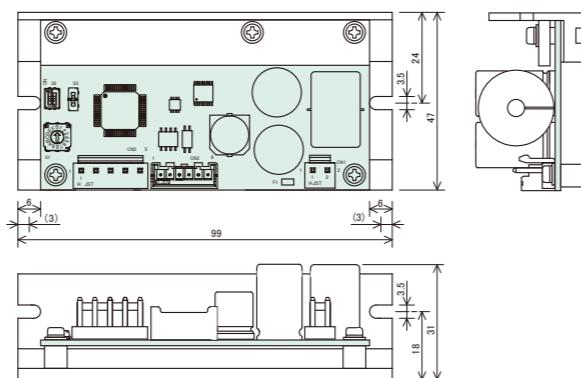


FEATURE

- More low-priced and compact size micro step driver.
- Drive Current : 0.12A/phase, 0.18A/phase, 2.4A/phase.
- Low vibration drive (Full or Half step).
- Optical-isolator input.
- Automatic current reduction.
- Small size.

*Optional Parts ; Wire assembled connector ▶ Page 50

DIMENSIONS (unit:mm)



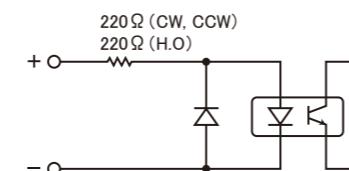
MOTOR

- 5/10 lead 5-Phase stepping motors such as Tamagawa-seiki or Oriental-motor.

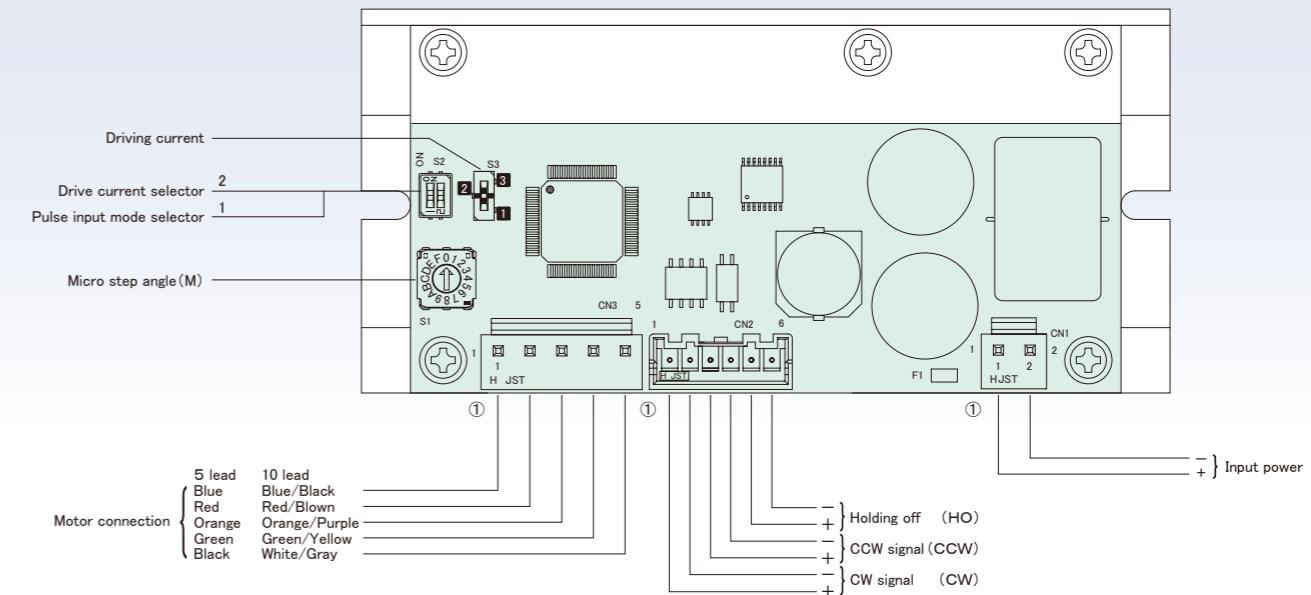
See table below for the pin no. of the connector and color of motor leads.

| Connector No. | 5 lead | 10 lead |
|---------------|--------|---------------|
| 1 | Blue | Blue/Black |
| 2 | Red | Red/Blown |
| 3 | Orange | Orange/Purple |
| 4 | Green | Green/Yellow |
| 5 | Black | White/Gray |

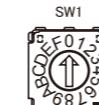
INPUT CIRCUIT



NAME AND FUNCTION



SETTING MICROSTEP RESOLUTION



Resolution for 2 series : When DIP Switch SW2 is OFF.

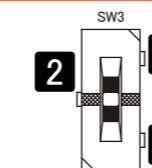
| SW No. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|----------|----|-----|-----|-----|-----|----|----|----|----|----|
| Division | 1 | 2 | 4 | 5 | 8 | 10 | 20 | 40 | 80 | 16 |
| A | B | C | D | E | F | | | | | |
| 25 | 50 | 100 | 125 | 200 | 250 | | | | | |

$$\text{Micro Step Angle} = \frac{\text{Base Step Angle}}{\text{Division}}$$

Resolution for 3 series : When DIP Switch SW2 is ON.

| SW No. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|----------|----|-----|-----|-----|-----|----|----|----|----|----|
| Division | 1 | 2 | 3 | 6 | 12 | 18 | 24 | 32 | 36 | 48 |
| A | B | C | D | E | F | | | | | |
| 60 | 72 | 120 | 160 | 180 | 240 | | | | | |

SETTING DRIVE CURRENT



- DIP Switch "S3"
 for 2.4A/phase : Switch to "1".
 for 1.2A/phase : Switch to "2"(Center).
 for 1.8A/phase : Switch to "3".

DIP SW FUNCTION

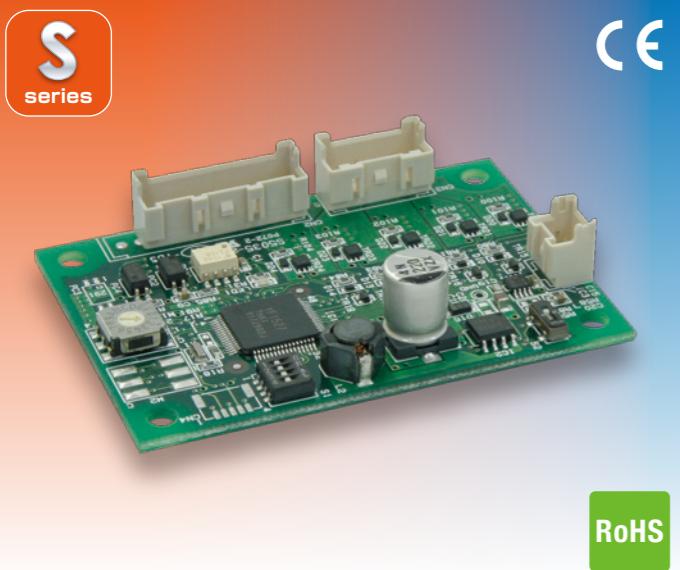


| No. | Mode | ON | OFF |
|-----|------------------------|-----------|-----------|
| 1 | Pulse mode | One pulse | Two pulse |
| 2 | Drive current selector | 3 series | 2 series |

5 Phase Stepping Motor Driver

MC-S5035

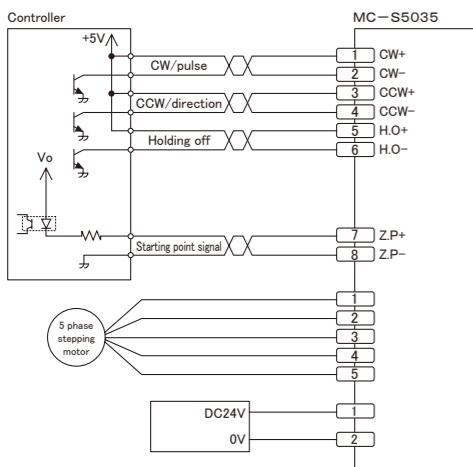
STEPPINGMOTOR DRIVER



SPECIFICATION

| | |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name | 5 phase stepping motor driver |
| Model | MC-S5035 |
| Driving method | Micro step |
| Input power | DC24V ±5% 0.8A Max. |
| Drive current | 0.35A/phase |
| Division | 2 series : 1, 2, 4, 5, 8, 10, 16, 20, 25, 40, 50, 80, 100, 125, 200, 250 3 series : 1, 2, 3, 6, 12, 18, 24, 32, 36, 48, 60, 72, 120, 160, 180, 240 |
| Maximum frequency | 500 kpps |
| Input signal | Optical-isolator input [1]:3~5V, [0]:-3~0.5V Input resistance CW, CCW:220Ω H.O:220Ω |
| Output signal (Z.P) | Optical-isolator open corrector output Condition : DC30V or less, 50mA or less |
| Function | Pulse input mode selector , Micro step angle select , Automatic current reduction |
| Operating temperature range | 0~40°C |
| Operating humidity range | 0~85% |
| Weight | 16.4g |

SAMPLE WIRING DIAGRAM

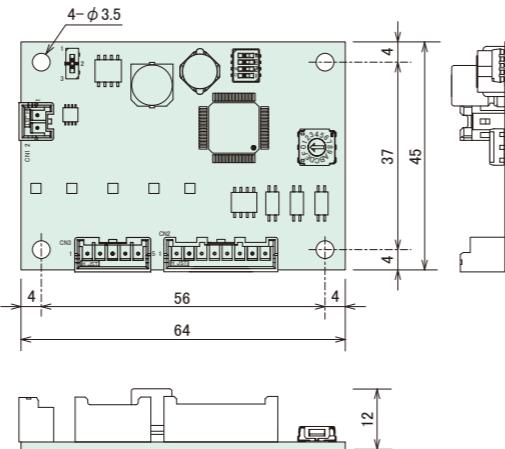


FEATURE

- More low-priced and compact size micro step driver.
- Maximum resolution is 1/250 (125,000 pulse per rotation).
- Low vibration drive(Full or Half step).
- Optical-isolator input.
- Automatic current reduction.
- Easy setting(resolution & current).

*Optional Parts : Wire assembled connector ▶Page 50

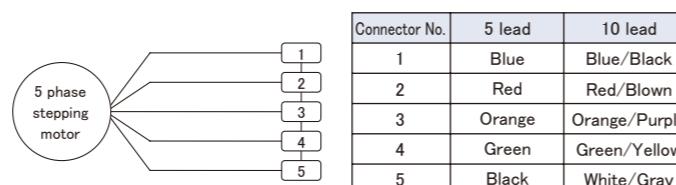
DIMENSIONS (unit:mm)



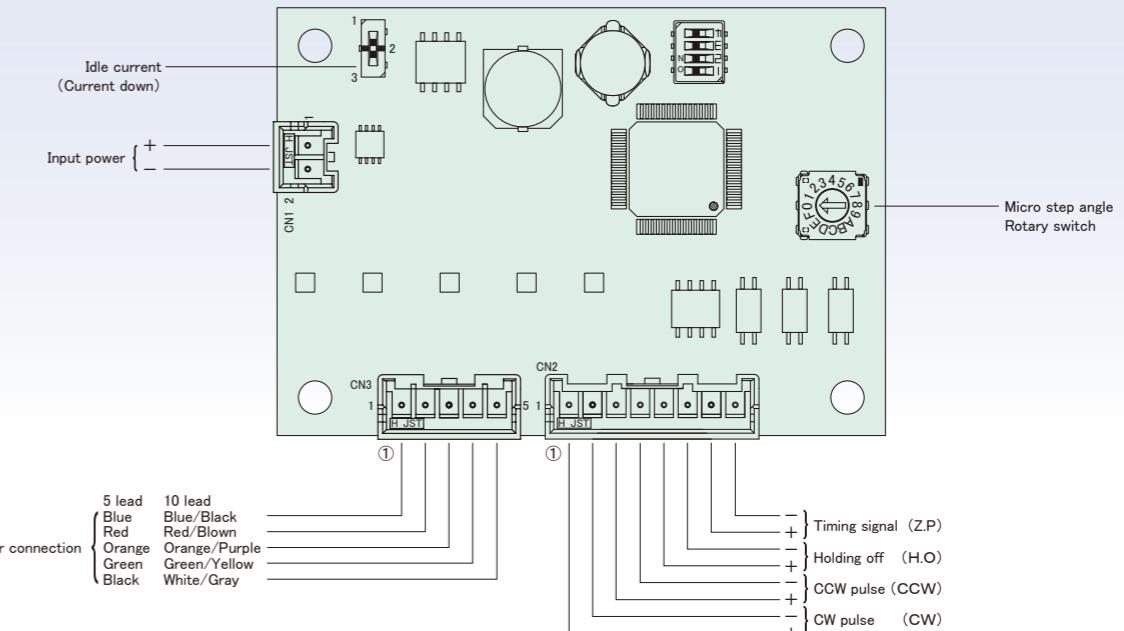
MOTOR

- 5/10 lead 5-Phase stepping motors such as Tamagawa-seiki or Oriental-motor.

See table below for the pin no. of the connector and color of motor leads.



NAME AND FUNCTION



SETTING MICROSTEP RESOLUTION



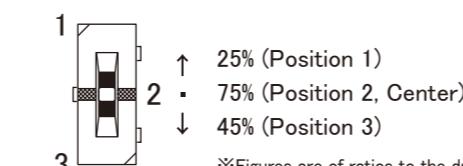
Resolution for 2 series : When DIP Switch SW2 is OFF.

| SW No. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|----------|----|-----|-----|-----|-----|----|----|----|----|-----|
| Division | 1 | 2 | 4 | 5 | 8 | 10 | 20 | 40 | 80 | 160 |
| A | B | C | D | E | F | | | | | |
| 25 | 50 | 100 | 125 | 200 | 250 | | | | | |

Resolution for 3 series : When DIP Switch SW2 is ON.

| SW No. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|----------|----|-----|-----|-----|-----|----|----|----|----|----|
| Division | 1 | 2 | 3 | 6 | 12 | 18 | 24 | 32 | 36 | 48 |
| A | B | C | D | E | F | | | | | |
| 60 | 72 | 120 | 160 | 180 | 240 | | | | | |

SETTING IDLE CURRENT (CURRENT DOWN)



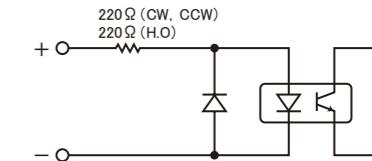
*Figures are of ratios to the drive current.

DIP SW FUNCTION



| No. | Mode | ON | OFF |
|-----|-------------------------------------|------------------------|-----------|
| 1 | Pulse mode (CK) | One pulse | Two pulse |
| 2 | Drive current selector (2·3) | 3 series | 2 series |
| 3 | Internal function confirmation (OP) | Turning off when using | |
| 4 | Idle current reduction (CD) | Not active | Activated |

INPUT CIRCUIT



5 Phase Stepping Motor Driver

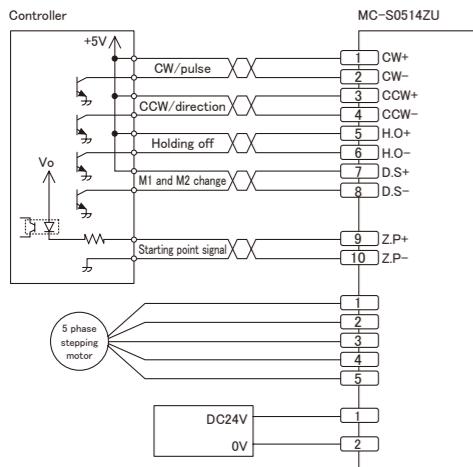
MC-S0514ZU



SPECIFICATION

| | |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name | 5 phase stepping motor driver |
| Model | MC-S0514ZU |
| Driving method | Micro step |
| Input power | DC24V ±5% 3A Max. |
| Drive current | 0.35~1.4A/phase Switching |
| Division | 2 series : 1, 2, 4, 5, 8, 10, 16, 20, 25, 40, 50, 80, 100, 125, 200, 250 3 series : 1, 2, 3, 6, 12, 18, 24, 32, 36, 48, 60, 72, 120, 160, 180, 240 |
| Maximum frequency | 500 kpps |
| Input signal | Optical-isolator input [1]:3~5V, [0]:3~0.5V Input resistance CW:220Ω CCW:220Ω H.O.:220Ω |
| Output signal (Z.P.) | Optical-isolator open corrector output Condition : DC30V or less, 50mA or less |
| Function | Pulse input mode selector , Micro step angle select , Automatic current reduction |
| Operating temperature range | 0~40°C |
| Operating humidity range | 0~85% |
| Weight | 93g |

SAMPLE WIRING DIAGRAM



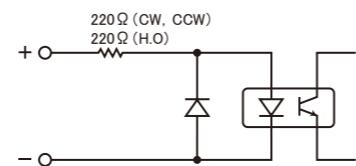
MOTOR

● 5/10 lead 5-Phase stepping motors such as Tamagawa-seiki or Oriental-motor.

See table below for the pin no. of the connector and color of motor leads.

| Connector No. | 5 lead | 10 lead |
|---------------|--------|---------------|
| 1 | Blue | Blue/Black |
| 2 | Red | Red/Blown |
| 3 | Orange | Orange/Purple |
| 4 | Green | Green/Yellow |
| 5 | Black | White/Gray |

INPUT CIRCUIT

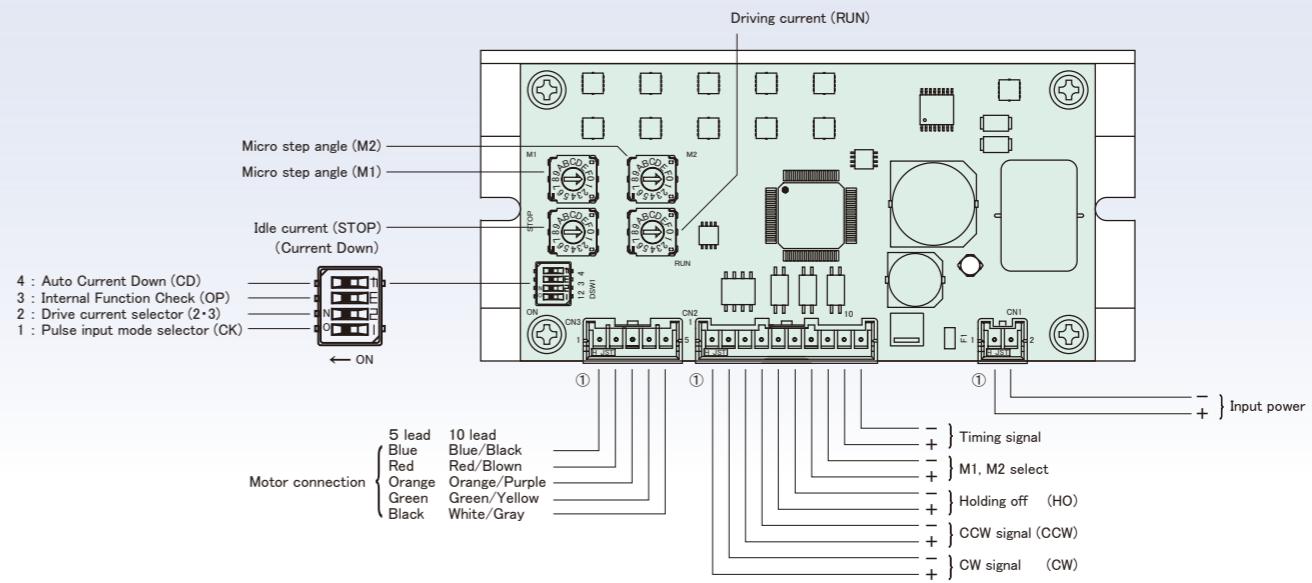


FEATURE

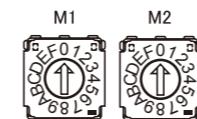
- More low-priced and compact size micro step driver.
- Drive current 0.35 to 1.4A/phase.
- Drive and Holding current selectable from 16 values.
- 2 microstep resolution can be selected from 16 choices. 2 selected resolution is switchable.
- Low vibration drive(Full or Half step).
- Small size.

*Optional Parts : Wire assembled conector ▶Page 50

NAME AND FUNCTION



SETTING MICROSTEP RESOLUTION



$$\text{Micro Step Angle} = \frac{\text{Base Step Angle}}{\text{Division}}$$

Resolution for 2 series : When DIP Switch SW2 is OFF.

| SW No. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|----------|----|-----|-----|-----|-----|----|----|----|----|-----|
| Division | 1 | 2 | 4 | 5 | 8 | 10 | 20 | 40 | 80 | 160 |
| A | B | C | D | E | F | | | | | |
| 25 | 50 | 100 | 125 | 200 | 250 | | | | | |

Resolution for 3 series : When DIP Switch SW2 is OFF.

| SW No. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|----------|----|-----|-----|-----|-----|----|----|----|----|----|
| Division | 1 | 2 | 3 | 6 | 12 | 18 | 24 | 32 | 36 | 48 |
| A | B | C | D | E | F | | | | | |
| 60 | 72 | 120 | 160 | 180 | 240 | | | | | |

- ① When only one microstep angle is used, use M1 rotary switch to set the division.
input terminal D.S shall not be connected or signal must be ZERO(0) state if it is connected.
② Input signal at D.S Terminal. Zero(0) = M1 division, One(1) = M2 division.
Speed of Forward & Backward speed can be changed by this function.

SETTING DRIVE CURRENT



Drive Current (RUN : Rotary Switch)

| SW No. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|------------|------|------|------|------|------|------|------|-----|------|------|
| Current(A) | 0.35 | 0.44 | 0.52 | 0.59 | 0.67 | 0.75 | 0.83 | 0.9 | 0.98 | 1.05 |
| A | B | C | D | E | F | | | | | |

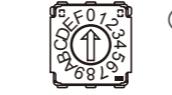
The desired drive current is obtained by setting RUN SW as follows.



Idle Current (STOP : Rotary Switch)

| SW No. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|------------|----|----|----|----|----|----|----|----|----|----|
| Current(%) | 25 | 30 | 35 | 41 | 45 | 50 | 55 | 59 | 63 | 67 |
| A | B | C | D | E | F | | | | | |

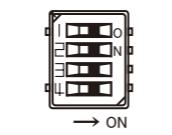
Idle current is established by setting STOP SW as follows.
Current (%) = Percentage against Drive Current.



Idle Current (STOP : Rotary Switch)

| SW No. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|------------|----|----|----|----|----|----|---|---|---|---|
| Current(%) | 71 | 75 | 79 | 83 | 87 | 91 | | | | |
| A | B | C | D | E | F | | | | | |

DIP SW FUNCTION



No.

Mode

ON

OFF

| | | | |
|---|-------------------------------------|------------------------|-----------|
| 1 | Pulse mode (CK) | One pulse | Two pulse |
| 2 | Drive current selector (2~3) | 3 series | 2 series |
| 3 | Internal function confirmation (OP) | Turning off when using | |
| 4 | Idle current reduction (CD) | Not active | Actived |

5 Phase Stepping Motor Driver

MC-S0528

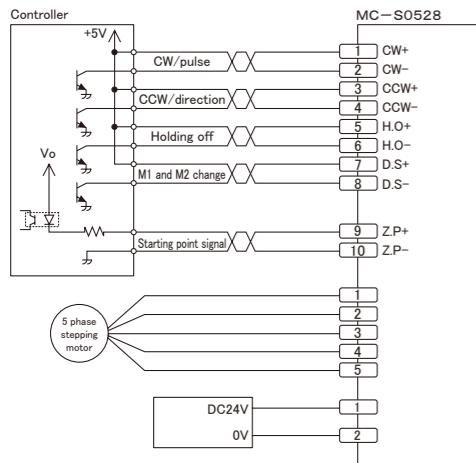
STEPPINGMOTOR DRIVER



SPECIFICATION

| | |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name | 5 phase stepping motor driver |
| Model | MC-S0528 |
| Driving method | Micro step |
| Input power | DC24V ±5% 7A Max. |
| Drive current | 0.75~2.8A/phase |
| Division | 2 series : 1, 2, 4, 5, 8, 10, 16, 20, 25, 40, 50, 80, 100, 125, 200, 250 3 series : 1, 2, 3, 6, 12, 18, 24, 32, 36, 48, 60, 72, 120, 160, 180, 240 |
| Maximum frequency | 500 kpps |
| Input signal | Optical-isolator input [1]:3~5V, [0]:-3~0.5V Input resistance CW:220Ω CCW:220Ω H.O:220Ω |
| Output signal (Z.P) | Optical-isolator open corrector output Condition : DC30V or less, 50mA or less |
| Function | Pulse input mode selector , Micro step angle select , Automatic current reduction |
| Operating temperature range | 0~40°C |
| Operating humidity range | 0~85% |
| Weight | 148g |

SAMPLE WIRING DIAGRAM



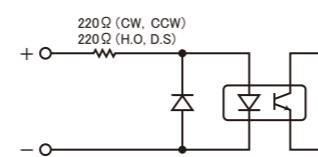
MOTOR

- 5/10 lead 5-Phase stepping motors such as Tamagawa-seiki or Oriental-motor.

See table below for the pin no. of the connector and color of motor leads.

| Connector No. | 5 lead | 10 lead |
|---------------|--------|---------------|
| 1 | Blue | Blue/Black |
| 2 | Red | Red/Blown |
| 3 | Orange | Orange/Purple |
| 4 | Green | Green/Yellow |
| 5 | Black | White/Gray |

INPUT CIRCUIT

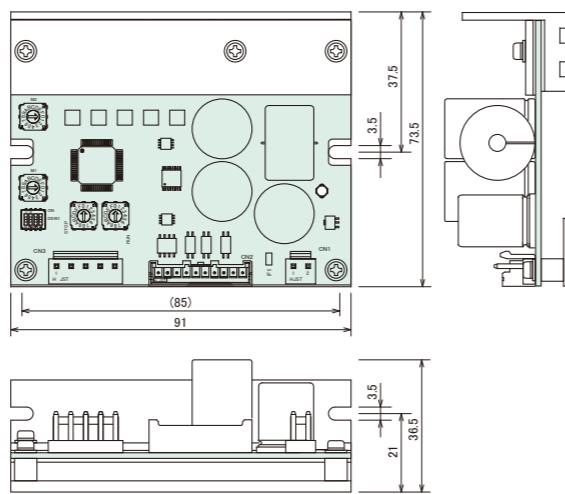


FEATURE

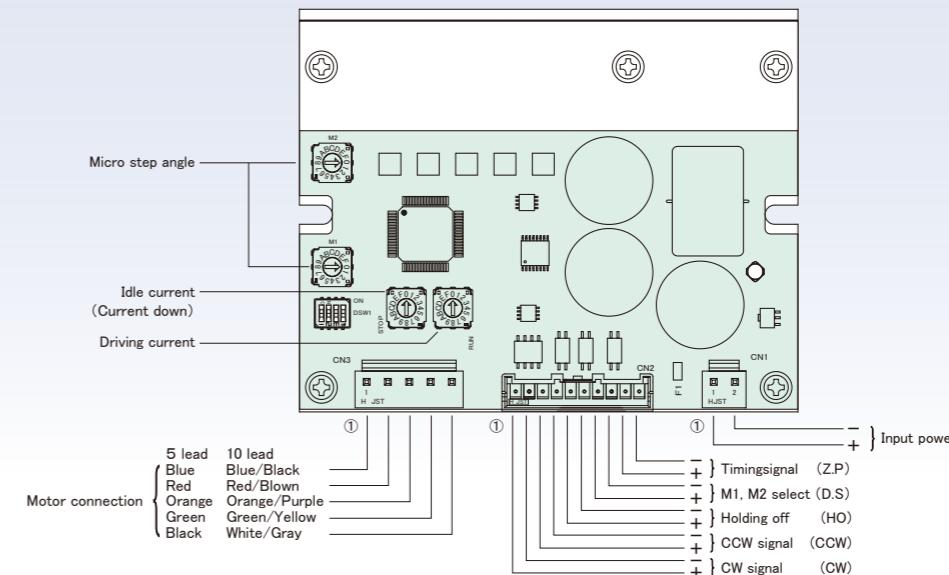
- Driving current is 2.8A/phase and compact size micro step driver.
- Maximum resolution is 1/250 (125,000 pulse per rotation).
- Low vibration drive(Full or Half step).
- Optical-isolator input.
- Automatic current reduction.
- Easy setting(resolution & current).
- Small size.

*Optional Parts ; Wire assembled conector ▶Page 50

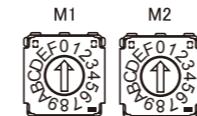
DIMENSIONS (unit:mm)



NAME AND FUNCTION



SETTING MICROSTEP RESOLUTION



$$\text{Micro Step Angle} = \frac{\text{Base Step Angle}}{\text{Division}}$$

Resolution for 2 series : When DIP Switch SW2 is OFF.

| SW No. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|----------|----|-----|-----|-----|-----|----|----|----|----|-----|
| Division | 1 | 2 | 4 | 5 | 8 | 10 | 20 | 40 | 80 | 160 |
| A | B | C | D | E | F | | | | | |
| 25 | 50 | 100 | 125 | 200 | 250 | | | | | |

Resolution for 3 series : When DIP Switch SW2 is ON.

| SW No. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|----------|----|-----|-----|-----|-----|----|----|----|----|----|
| Division | 1 | 2 | 3 | 6 | 12 | 18 | 24 | 32 | 36 | 48 |
| A | B | C | D | E | F | | | | | |
| 60 | 72 | 120 | 160 | 180 | 240 | | | | | |

- When only one microstep angle is used, use M1 rotary switch to set the division. input terminal D.S shall not be connected or signal must be ZERO(0) state if it is connected.

- Input signal at D.S Terminal. Zero(0) = M1 division, One(1) = M2 division.

Speed of Forward & Backward speed can be changed by this function.

SETTING DRIVE CURRENT

The desired drive current is obtained by setting RUN SW as follows.



Drive Current (RUN : Rotary Switch)

| SW No. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|------------|------|-----|------|------|------|------|------|------|------|------|
| Current(A) | 0.75 | 0.9 | 1.07 | 1.27 | 1.45 | 1.61 | 1.79 | 1.97 | 2.11 | 2.26 |
| A | B | C | D | E | F | | | | | |

Example ; Drive current = 2.8A/phase. RUN SW = C

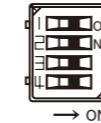


Idle Current (STOP : Rotary Switch)

| SW No. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|------------|----|----|----|----|----|----|----|----|----|----|
| Current(%) | 25 | 30 | 35 | 41 | 45 | 50 | 55 | 59 | 66 | 67 |
| A | B | C | D | E | F | | | | | |

Example ; When the drive current is set at 1.4A/Phase, idle current will be 0.7A/Phase at the switch position no. 5 (50%).

DIP SW FUNCTION

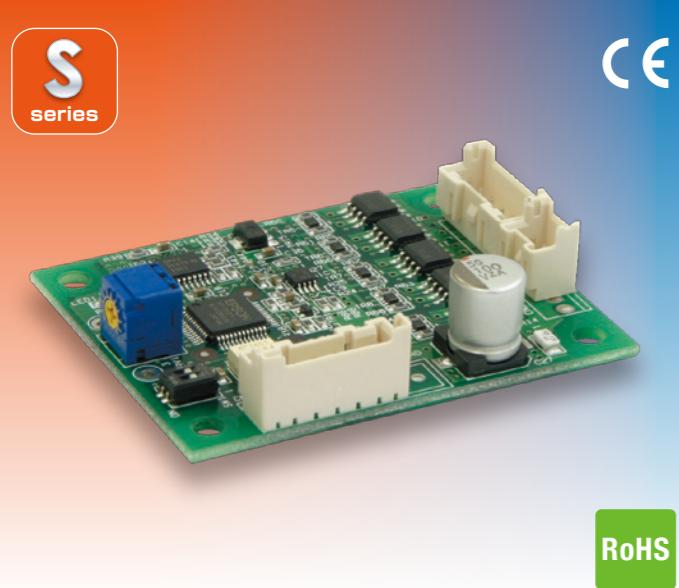


| No. | Mode | ON | OFF |
|-----|-------------------------------------|------------------------|-----------|
| 1 | Pulse mode (CK) | One pulse | Two pulse |
| 2 | Drive current selector (2~3) | 3 series | 2 series |
| 3 | Internal function confirmation (OP) | Turning off when using | |
| 4 | Idle current reduction (CD) | Not active | Actived |

5 Phase Stepping Motor Driver

MC-S3ML

STEPPINGMOTOR DRIVER



FEATURE

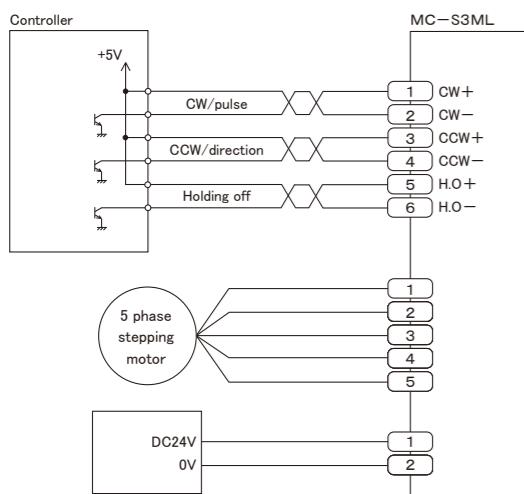
- Maximum drive current 0.35A/phase.
 - Single power supply DC24V.
 - Optical-isolator input.
 - Automatic current reduction.
 - Compact size driver.
 - Low price.

*Optional Parts ; Wire assembled conector ► Page 50

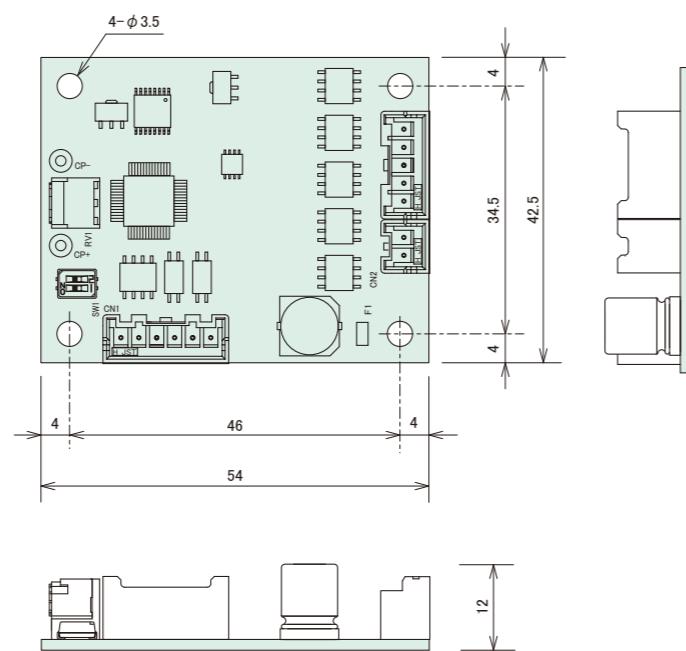
SPECIFICATION

| | |
|-----------------------------|--------------------------------------------------------------------------------------------------------|
| Name | 5 phase stepping motor driver |
| Model | MC-S3ML |
| Drive method | Full / Half Step |
| Input power | DC24V ±5% 0.8A Max. |
| Drive current | 0.12A~0.35A/phase |
| Maximum frequency | 70 kpps |
| Input signal | Optical-isolator input [1]:3~5V , [0]:-3~0.5V Input resistance CW, CCW, H.O:220Ω |
| Function | Pulse input mode selector , Full/half step select , Automatic current reduction at motor standstill |
| Operating temperature range | 0~40°C |
| Operating humidity range | 0~85% |
| Weight | 13g |

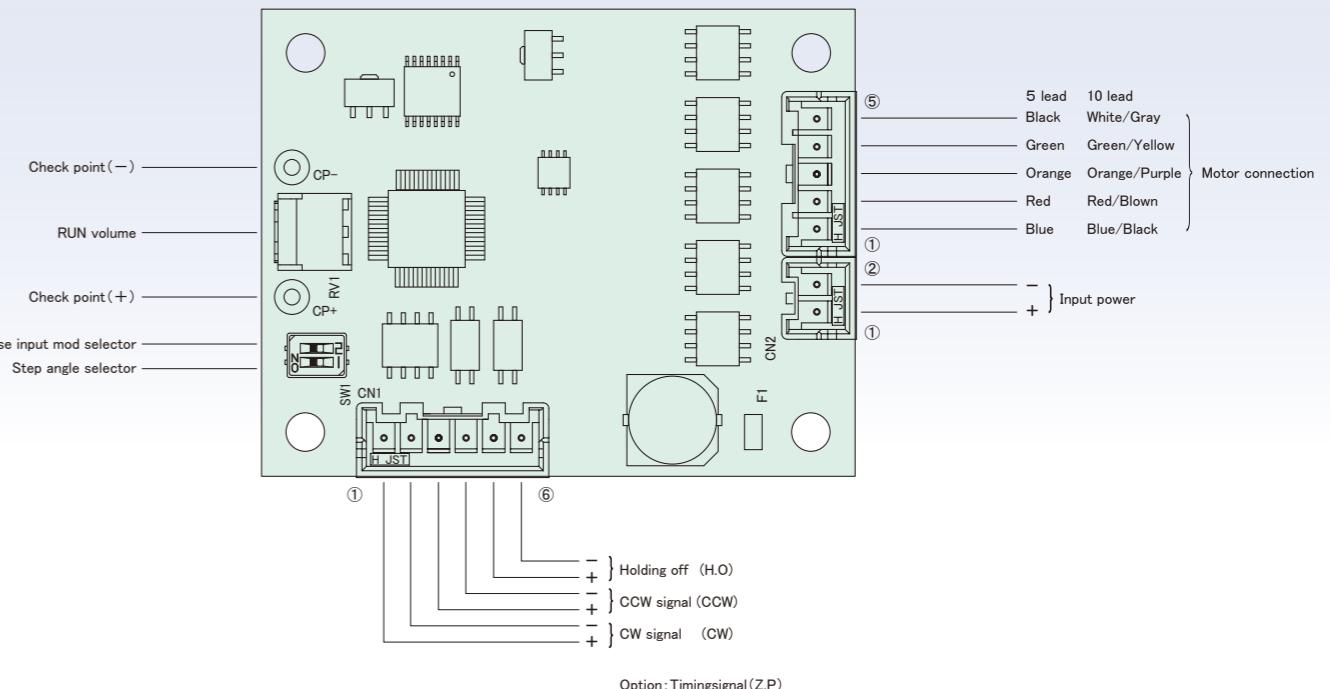
SAMPLE WIRING DIAGRAM



DIMENSIONS (unit:mm)



NAME AND FUNCTION



SETTING DRIVE CURRENT

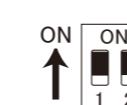
To obtain the desired drive current, connect a potentiometer to CP(+,-) and use the following formula:

Potentiometer voltage(V) = Desired drive current \times 8

Factory setting is 0.35A/phase.

- ① Turn RUN Volume Control all the way to the left before the system is powered.
 - ② Insert the cw signal (or the ccw signal) with a frequency of 10 pps or more, slowly turn the run volume and adjust it to the calculated voltage value. (Caution: Motor starts to rotate once the signal is input)
 - ③ At the Motor Standstill, the output current will be automatically reduced to 60% of the set current

DIP SW FUNCTION

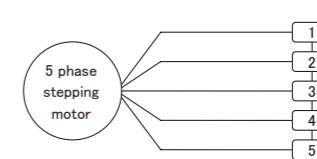


| No. | Mode | ON | OFF |
|-----|------------|---------------------------|---------------------------|
| 1 | Step angle | $0.72^\circ/\text{pulse}$ | $0.36^\circ/\text{pulse}$ |
| 2 | Pulse mode | One pulse | Two pulse |

MOTOR

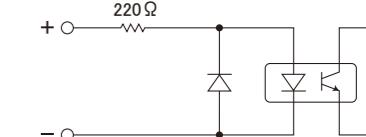
- 5/10 lead 5-Phase stepping motors such as Tamagawa-seiki or Oriental-motor.

See table below for the pin no. of the connector and color of motor leads.



| Connector No. | 5 lead | 10 lead |
|---------------|--------|---------------|
| 1 | Blue | Blue/Black |
| 2 | Red | Red/Blown |
| 3 | Orange | Orange/Purple |
| 4 | Green | Green/Yellow |
| 5 | Black | White/Gray |

INPUT CIRCUIT



5 Phase Stepping Motor Driver

MC-S5ML

STEPPINGMOTOR DRIVER



FEATURE

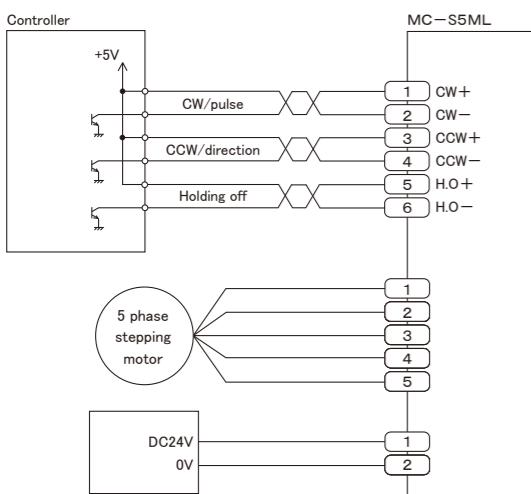
- Maximum drive current 1.4A/phase.
- Single power supply DC24V.
- Optical-isolator input.
- Automatic current reduction.
- Compact size driver.

※Optional Parts : Wire assembled conector ▶Page 50

SPECIFICATION

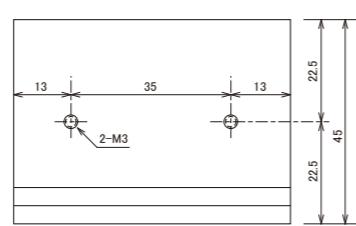
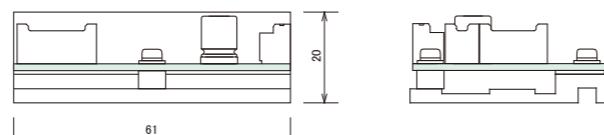
| | |
|-----------------------------|--------------------------------------------------------------------------------------------------------|
| Name | 5 phase stepping motor driver |
| Model | MC-S5ML |
| Drive method | Full / Half Step |
| Input power | DC24V ±5% 3A Max. |
| Drive current | 0.5A~1.4A/phase |
| Maximum frequency | 70 kpps |
| Input signal | Optical-isolator input [1]:3~5V, [0]:-3~0.5V Input resistance CW, CCW, H.O:220Ω |
| Function | Pulse input mode selector , Full/half step select , Automatic current reduction at motor standstill |
| Operating temperature range | 0~40°C |
| Operating humidity range | 0~85% |
| Weight | 63g (type 2) |

SAMPLE WIRING DIAGRAM

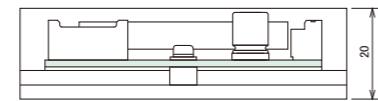
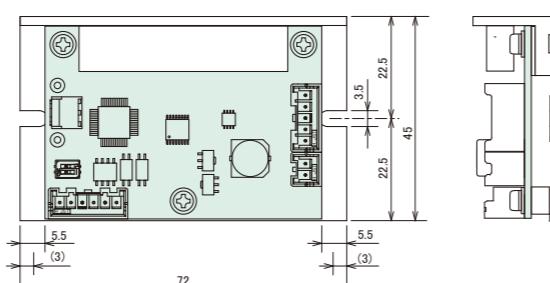


DIMENSIONS (unit:mm)

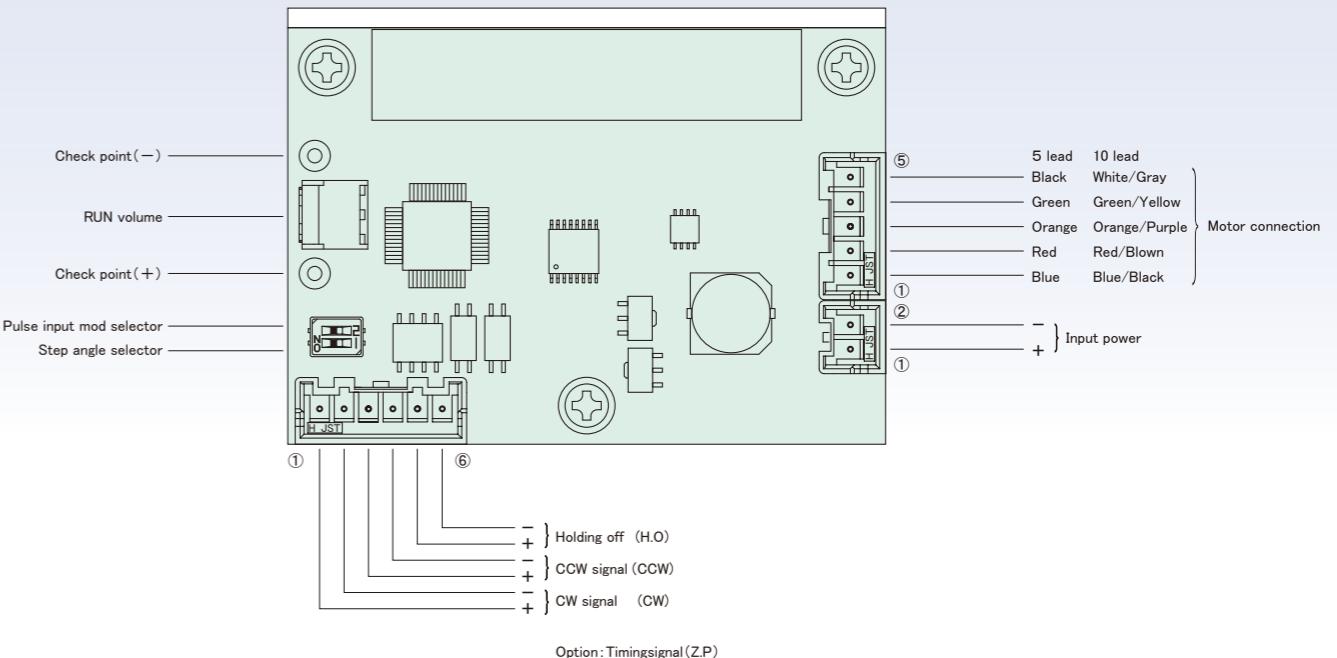
Type 1



Type 2



NAME AND FUNCTION



SETTING DRIVE CURRENT

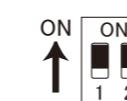
To obtain the desired drive current, connect a potentiometer to CP(+) and use the following formula:

Potentiometer voltage(V) = Desired drive current × 2

Factory setting is 1.4A/phase.

- ① Turn RUN Volume Control all the way to the left before the system is powered.
- ② Insert the cw signal (or the ccw signal) with a frequency of 10 pps or more, slowly turn the run volume and adjust it to the calculated voltage value. (Caution: Motor starts to rotate once the signal is input)
- ③ At the Motor Standstill, the output current will be automatically reduced to 50% of the set current.

DIP SW FUNCTION

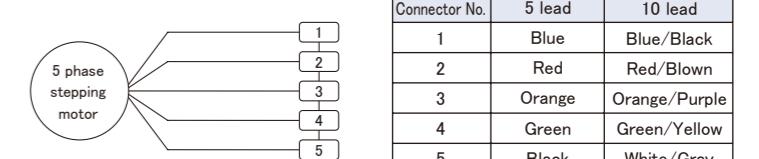


| No. | Mode | ON | OFF |
|-----|------------|-------------|-------------|
| 1 | Step angle | 0.72°/pulse | 0.36°/pulse |
| 2 | Pulse mode | One pulse | Two pulse |

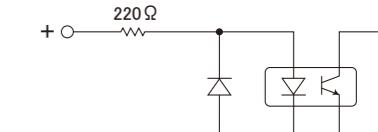
MOTOR

- 5/10 lead 5-Phase stepping motors such as Tamagawa-seiki or Oriental-motor.

See table below for the pin no. of the connector and color of motor leads.



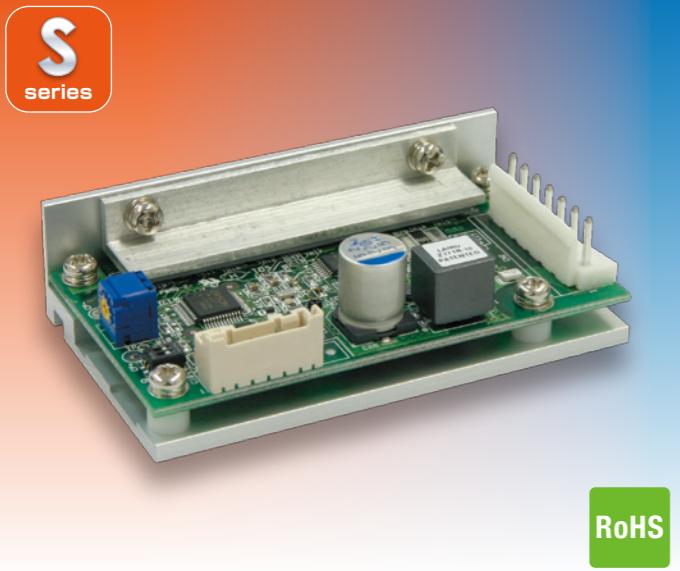
INPUT CIRCUIT



5 Phase Stepping Motor Driver

MC-S5G

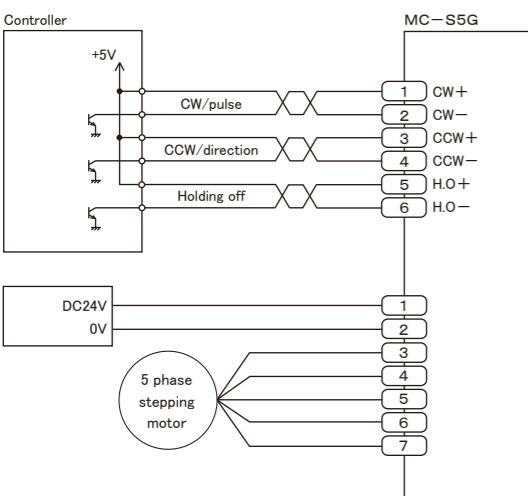
STEPPINGMOTOR DRIVER



SPECIFICATION

| | |
|-----------------------------|-----------------------------------------------------------------------------------------------------|
| Name | 5 phase stepping motor driver |
| Model | MC-S5G |
| Drive method | Full / Half Step |
| Input power | DC24V ±5% 6A Max. |
| Drive current | 1.0A~2.8A/phase |
| Maximum frequency | 70 kpps |
| Input signal | Optical-isolator input [1]:3~5V, [0]:-3~0.5V Input resistance CW, CCW, H.O:220Ω |
| Function | Pulse input mode selector , Full/half step select , Automatic current reduction at motor standstill |
| Operating temperature range | 0~40°C |
| Operating humidity range | 0~85% |
| Weight | 110g |

SAMPLE WIRING DIAGRAM



MOTOR

- 5/10 lead 5-Phase stepping motors such as Tamagawa-seiki or Oriental-motor.

See table below for the pin no. of the connector and color of motor leads.

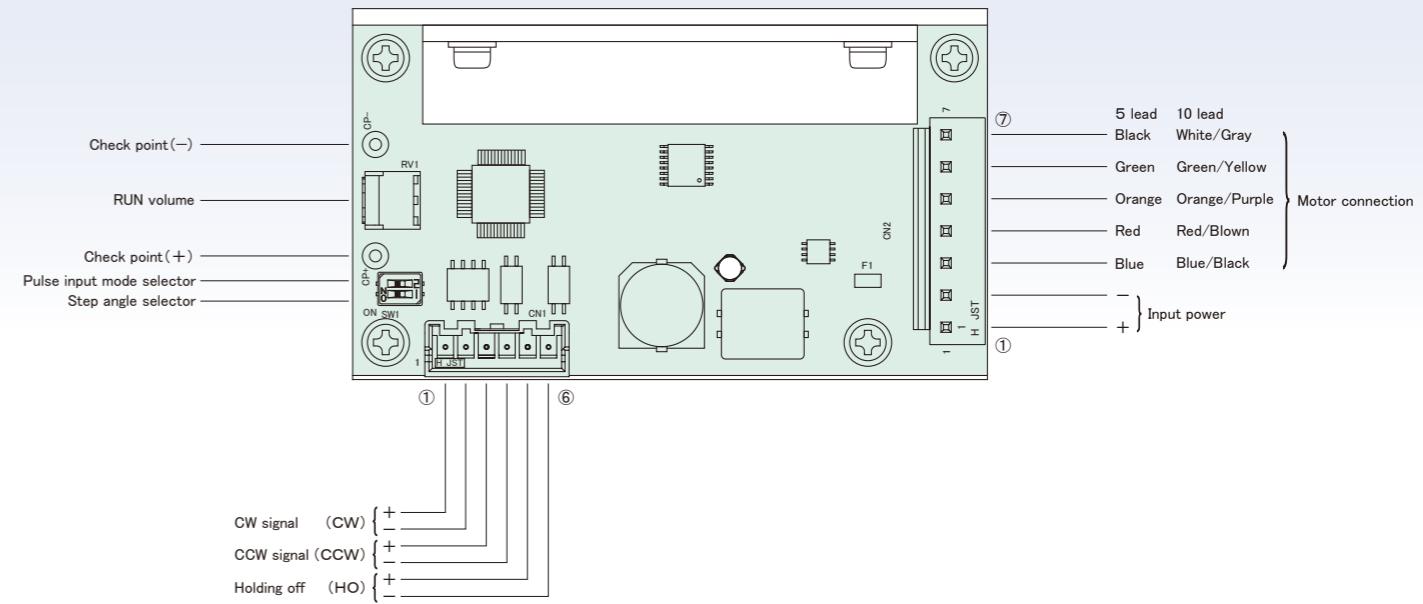
| Connector No. | 5 lead | 10 lead |
|---------------|--------|---------------|
| 3 | Blue | Blue/Black |
| 4 | Red | Red/Blown |
| 5 | Orange | Orange/Purple |
| 6 | Green | Green/Yellow |
| 7 | Black | White/Gray |

FEATURE

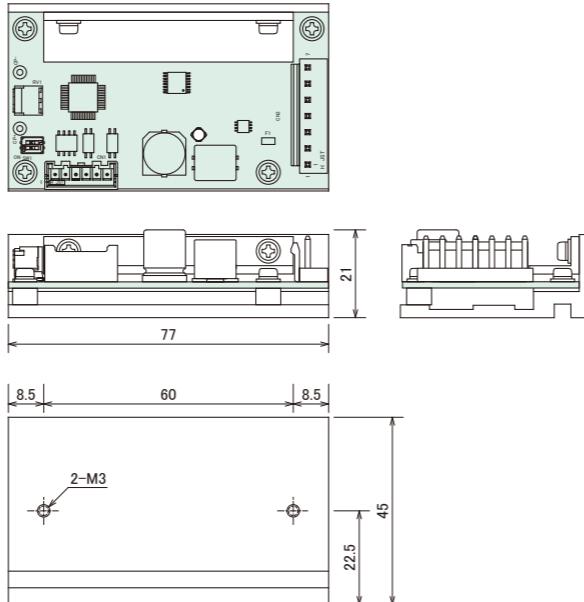
- A low heat generation circuit that suppresses heat generation of the driver is adopted.
- Maximum drive current 2.8A/phase.
- Single power supply DC24-36V.
- Optical-isolator input.
- Automatic current reduction.
- Compact size driver.

*Optional Parts : Wire assembled conector ▶Page 50

NAME AND FUNCTION



DIMENSIONS (unit:mm)



SETTING DRIVE CURRENT

To obtain the desired drive current, connect a potentiometer to CP(+,-) and use the following formula:
Potentiometer voltage (V) = Desired drive current × 1

Factory setting is 2.8A/phase.

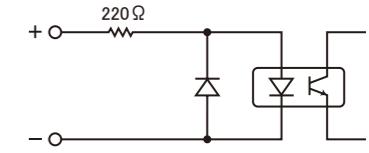
- Turn RUN Volume Control all the way to the left before the system is powered.
- Insert the cw signal (or the ccw signal) with a frequency of 10 pps or more, slowly turn the run volume and adjust it to the calculated voltage value. (Caution: Motor starts to rotate once the signal is input)
- At the Motor Standstill, the output current will be automatically reduced to 60% of the set current.

DIP SW FUNCTION



| No. | Mode | ON | OFF |
|-----|------------|-------------|-------------|
| 1 | Step angle | 0.72°/pulse | 0.36°/pulse |
| 2 | Pulse mode | One pulse | Two pulse |

INPUT CIRCUIT



5 Phase Stepping Motor Driver

MC-S5514T/S5514T-3

S
series

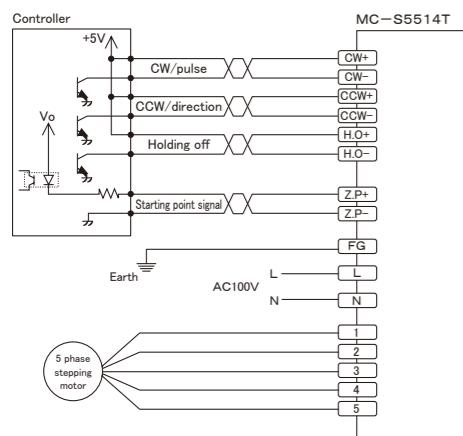
CE

RoHS

SPECIFICATION

| | |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name | 5 phase stepping motor driver |
| Model | MC-S5514T , MC-S5514T-3 |
| Driving method | Micro step |
| Input power | AC100~115V 50/60Hz 3.5A Max. |
| Drive current | 0.35A~1.4A/phase |
| Division | MC-5514T 1, 2, 4, 5, 8, 10, 16, 20, 25, 40, 50, 80, 100, 125, 200, 250 MC-5514T-3 1, 2, 3, 6, 12, 18, 24, 32, 36, 48, 60, 72, 120, 160, 180, 240 |
| Maximum frequency | 500 kpps |
| Input signal | Optical-isolator input [1]:3~5V , [0]:-3~0.5V Input resistance CW, CCW, H.O.:220Ω |
| Output signal (Z.P.) | Optical-isolator open corrector output Condition ; DC30V or less, 50mA or less |
| Function | Pulse input mode selector , Micro step angle select , Automatic current reduction , Driving voltage select Initial system check |
| Insulation resistance | The value is 50MΩ or more,that measured by DC500V Megger Between the AC input and the case. |
| Withstand voltage | It is not above even if AC1500V is impressed between the AC input and the case for one minute. |
| Operating temperature range | 0~40°C |
| Operating humidity range | 0~85% |
| Weight | 750g |

SAMPLE WIRING DIAGRAM



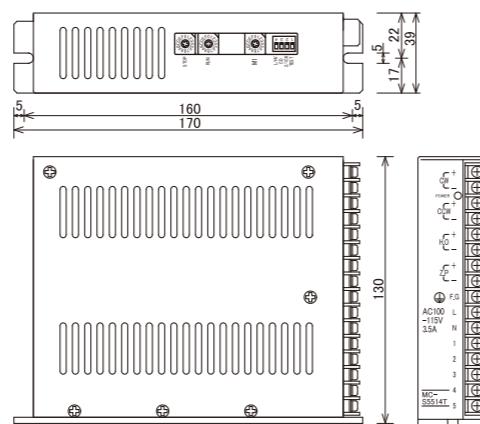
CE marking

FEATURE

- It is 5 Phase-stepping motor driver of the AC100-115V input.
- Maximum resolution is 1/250 (125,000 pulse per rotation).
- Low vibration drive(Full or Half step). (Except MC-S5514T-3)
- Applies to a wide motor to 0.35A/phase-1.4A/phase.

DIMENSIONS (unit:mm)

The size does not contain the projection thing such as the screws.



MOTOR

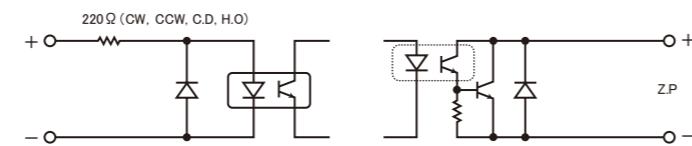
- 5/10 lead 5-Phase stepping motors such as Tamagawa-seiki or Oriental-motor.

See table below for the pin no. of the connector and color of motor leads.

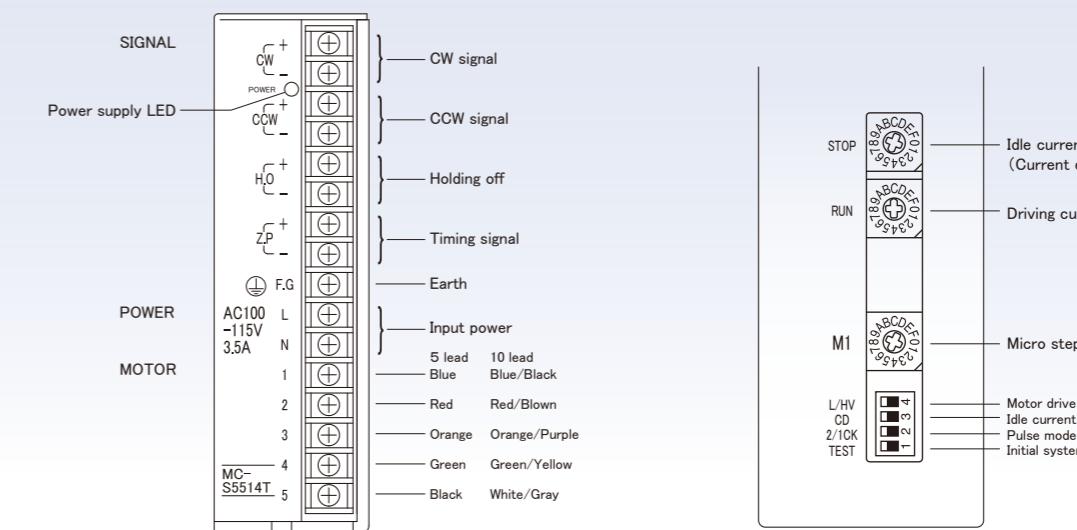
| Connector No. | 5 lead | 10 lead |
|---------------|--------|---------------|
| 1 | Blue | Blue/Black |
| 2 | Red | Red/Blown |
| 3 | Orange | Orange/Purple |
| 4 | Green | Green/Yellow |
| 5 | Black | White/Gray |

Note : Please use the wire rod of AWG20(0.5mm²) or more for connecting the motor.

INPUT/OUTPUT CIRCUIT



NAME AND FUNCTION

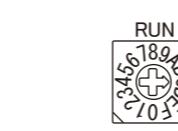


SETTING MICROSTEP RESOLUTION



| | | | | | | | | | | | |
|-----------------------------------------------------|-----------------|------------------|---------------|----|---|----|----|----|----|----|----|
| MC-S5514T | SW No. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| | Division | 1 | 2 | 4 | 5 | 8 | 10 | 20 | 40 | 80 | 16 |
| MC-S5514T-3 | SW No. | 0 | 1* | 2* | 3 | 6 | 12 | 18 | 24 | 32 | 48 |
| | Division | 1* | 2* | 3 | 6 | 12 | 18 | 24 | 32 | 36 | 48 |
| Micro Step Angle | Base Step Angle | 72 divided steps | → 0.01 degree | | | | | | | | |
| | Division | | | | | | | | | | |
| ※ Does not drive at the low vibration in this case. | | | | | | | | | | | |

SETTING DRIVE CURRENT



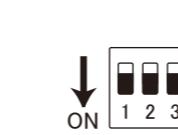
| | | | | | | | | | | | |
|-----------------------------------------------------|------------|------|------|------|------|------|------|------|------|------|------|
| Drive Current (RUN : Rotary Switch) | SW No. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| | Current(A) | 0.35 | 0.44 | 0.53 | 0.61 | 0.7 | 0.75 | 0.87 | 0.96 | 1.05 | 1.13 |
| Example : Drive current = 1.4A/phase. RUN SW = C | A | B | C | D | E | F | | | | | |
| | 1.22 | 1.3 | 1.4 | 1.48 | 1.57 | 1.65 | | | | | |

The desired drive current is obtained by setting RUN SW as follows.



| | | | | | | | | | | | |
|-------------------------------------------------------------------------------------------------------------------------------|------------|----|----|----|----|----|----|----|----|----|----|
| Idle Current (STOP : Rotary Switch) | SW No. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| | Current(%) | 28 | 32 | 37 | 41 | 45 | 49 | 53 | 57 | 62 | 66 |
| Example : When the drive current is set at 1.4A/Phase, idle current will be 0.7A/Phase at the switch position no. 5 (50%). | A | B | C | D | E | F | | | | | |
| | 70 | 74 | 78 | 82 | 87 | 91 | | | | | |

DIP SW FUNCTIONS



5 Phase Stepping Motor Driver

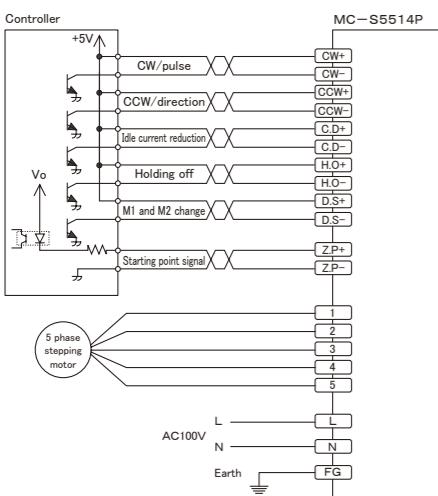
MC-S5514P/S5514P-3



SPECIFICATION

| | |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name | 5 phase stepping motor driver |
| Model | MC-S5514P , MC-S5514P-3 |
| Driving method | Micro step |
| Input power | AC100~115V 50/60Hz 3.5A Max. |
| Drive current | 0.35A~1.4A/phase |
| Division | MC-S5514P 1, 2, 4, 5, 8, 10, 16, 20, 25, 40, 50, 80, 100, 125, 200, 250 MC-S5514P-3 1, 2, 3, 6, 12, 18, 24, 32, 36, 48, 60, 72, 120, 160, 180, 240 |
| Maximum frequency | 500 kpps |
| Input signal | Optical-isolator input [1]:3~5V , [0]:-3~0.5V Input resistance CW, CCW, C.D, H.O, D.S:220Ω |
| Output signal (Z.P.) | Optical-isolator open corrector output Condition ; DC30V or less, 50mA or less |
| Function | Pulse input mode selector , Micro step angle select , Automatic current reduction , Driving voltage select Initial system check |
| Insulation resistance | The value is 50MΩ or more,that measured by DC500V Megger Between the AC input and the case. |
| Withstand voltage | It is not above even if AC1500V is impressed between the AC input and the case for one minute. |
| Operating temperature range | 0~40°C |
| Operating humidity range | 0~85% |
| Weight | 750g |

SAMPLE WIRING DIAGRAM



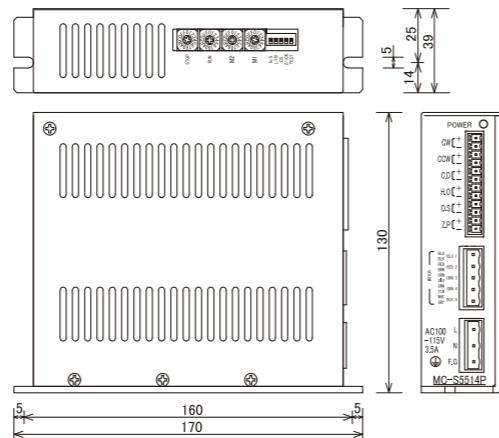
CE marking

FEATURE

- It is 5 Phase-stepping motor driver of the AC100-115V input.
- Maximum resolution is 1/250 (125,000 pulse per rotation).
- Low vibration drive(Full or Half step). (Except MC-S5514P-3)
- Applies to a wide motor to 0.35A/phase-1.4A/phase.
- I/O uses the connector.

DIMENSIONS (unit:mm)

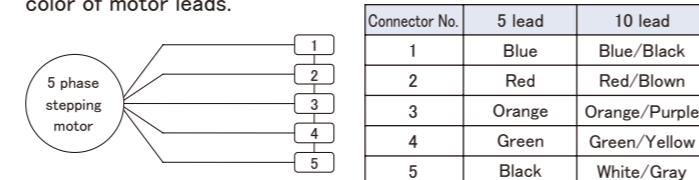
The size does not contain the projection thing such as the screws.



MOTOR

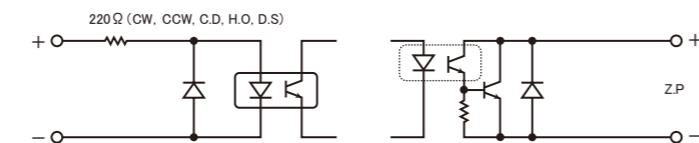
- 5/10 lead 5-Phase stepping motors such as Tamagawa-seiki or Oriental-motor.

See table below for the pin no. of the connector and color of motor leads.

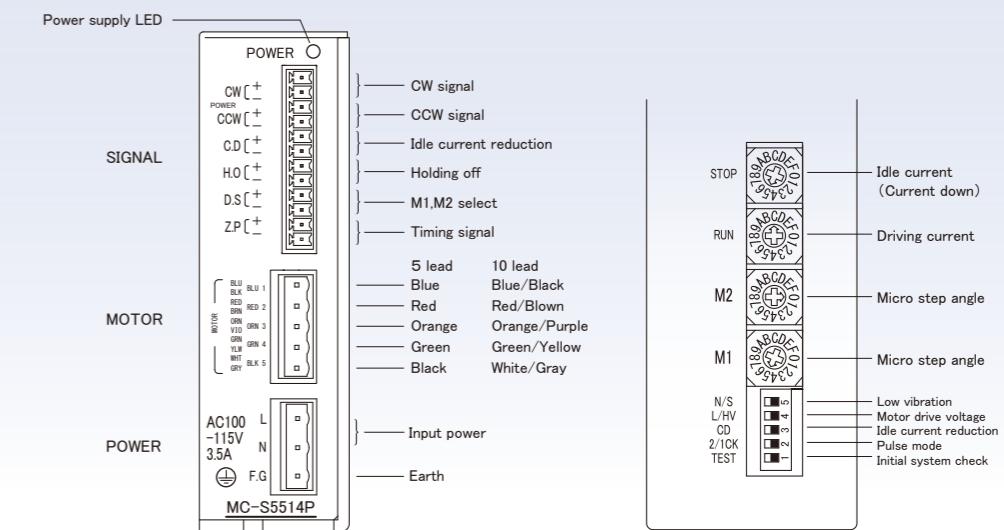


Note : Please use the wire rod of AWG20(0.5mm²) or more for connecting the motor.

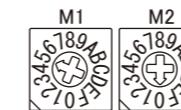
INPUT/OUTPUT CIRCUIT



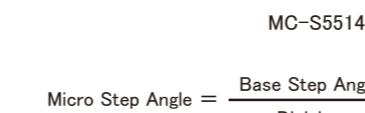
NAME AND FUNCTION



SETTING MICROSTEP RESOLUTION



| MC-S5514P | SW No. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|-----------|----------|---|---|---|---|---|----|----|----|----|----|
| | Division | 1 | 2 | 4 | 5 | 8 | 10 | 20 | 40 | 80 | 16 |
| | | A | B | C | D | E | F | | | | |



| MC-S5514P-3 | SW No. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|-------------|----------|-----|-----|---|---|----|----|----|----|----|----|
| | Division | 1** | 2** | 3 | 6 | 12 | 18 | 24 | 32 | 36 | 48 |
| | | A | B | C | D | E | F | | | | |

$$\text{Micro Step Angle} = \frac{\text{Base Step Angle}}{\text{Division}}$$

72 divided steps → 0.01 degree

※Does not drive at the low vibration in this case.

SETTING DRIVE CURRENT



Drive Current (RUN : Rotary Switch)

| SW No. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|------------|------|------|------|------|-----|------|------|------|------|------|
| Current(A) | 0.35 | 0.44 | 0.53 | 0.61 | 0.7 | 0.75 | 0.87 | 0.96 | 1.05 | 1.13 |
| | A | B | C | D | E | F | | | | |

Example : Drive current = 1.4A/phase.
RUN SW = C

The desired drive current is obtained by setting RUN SW as follows.

SETTING IDLE CURRENT (CURRENT DOWN)



Idle Current (STOP : Rotary Switch)

| SW No. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|------------|----|----|----|----|----|----|----|----|----|----|
| Current(%) | 28 | 32 | 37 | 41 | 45 | 49 | 53 | 57 | 62 | 66 |
| | A | B | C | D | E | F | | | | |

Example : When the drive current is set at 1.4A/Phase,
idle current will be 0.7A/Phase at the switch
position no. 5 (50%).

DIP SW FUNCTIONS



| No. | Indication | Mode | ON | OFF |
|-----|------------|------------------------|-----------------------------|-------------------|
| 1 | TEST | Initial system check | Rotating (60pps). | Always set to off |
| 2 | 2/ICK | Pulse mode | One pulse | Two pulse |
| 3 | C.D | Idle current reduction | Not active | Activated |
| 4 | L/HV | Motor drive voltage | *High speed and high torque | Standard |
| 5 | N/S | Low vibration | Low vibration drive | Standard drive |

※Please note heat of the motor when driving by high speed and a high torque.

5 Phase Stepping Motor Driver

MC-S7514PCL/S7514PCL-3



UL standard recognition

CE marking

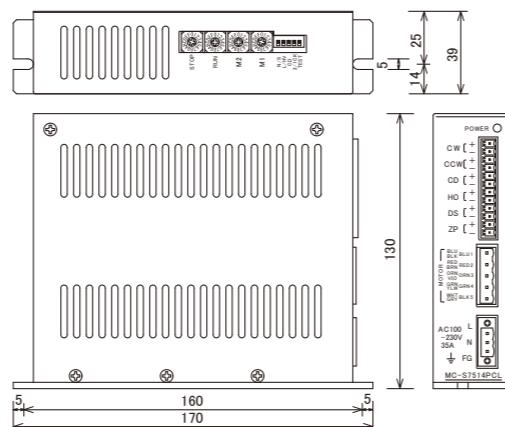
SEMI-F47

FEATURE

- It is 5 Phase-stepping motor driver of the AC200-230V input.
- Maximum resolution is 1/250 (125,000 pulse per rotation).
- Low vibration drive(Full or Half step). (Except MC-S7514PCL-3)
- Applies to a wide motor to 0.35A/phase-1.4A/phase.
- I/O uses the connector.

DIMENSIONS (unit:mm)

The size does not contain the projection thing such as the screws.



MOTOR

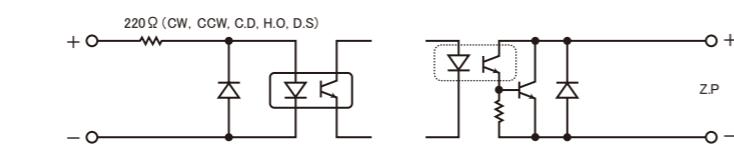
- 5/10 lead 5-Phase stepping motors such as Tamagawa-seiki or Oriental-motor.

See table below for the pin no. of the connector and color of motor leads.

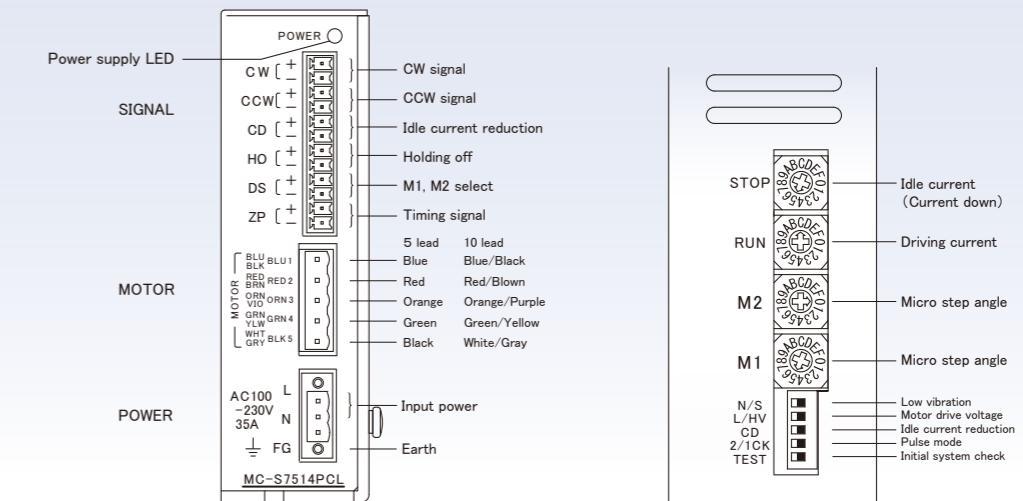
| Connector No. | 5 lead | 10 lead |
|---------------|--------|---------------|
| 1 | Blue | Blue/Black |
| 2 | Red | Red/Blown |
| 3 | Orange | Orange/Purple |
| 4 | Green | Green/Yellow |
| 5 | Black | White/Gray |

Note : Please use the wire rod of AWG20(0.5mm²) or more for connecting the motor.

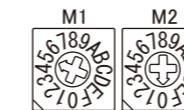
INPUT/OUTPUT CIRCUIT



NAME AND FUNCTION



SETTING MICROSTEP RESOLUTION



MC-S7514PCL

| SW No. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|----------|---|---|---|---|---|----|----|----|----|----|
| Division | 1 | 2 | 4 | 5 | 8 | 10 | 20 | 40 | 80 | 16 |
| | | | | | | | A | B | C | D |

| SW No. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|----------|----|----|---|---|----|----|----|----|----|----|
| Division | 1* | 2* | 3 | 6 | 12 | 18 | 24 | 32 | 36 | 48 |
| | | | | | | | A | B | C | D |

MC-S7514PCL-3

| SW No. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|----------|----|----|---|---|----|----|----|----|----|----|
| Division | 1* | 2* | 3 | 6 | 12 | 18 | 24 | 32 | 36 | 48 |
| | | | | | | | A | B | C | D |

Micro Step Angle = $\frac{\text{Base Step Angle}}{\text{Division}}$

72 divided steps → 0.01 degree

※Does not drive at the low vibration in this case.

SETTING DRIVE CURRENT

The desired drive current is obtained by setting RUN SW as follows.



Drive Current (RUN : Rotary Switch)

| SW No. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|------------|------|------|------|------|-----|------|------|------|------|------|
| Current(A) | 0.35 | 0.44 | 0.53 | 0.61 | 0.7 | 0.75 | 0.87 | 0.96 | 1.05 | 1.13 |
| | | | | | | | A | B | C | D |

| SW No. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|------------|------|-----|-----|------|------|------|---|---|---|---|
| Current(A) | 1.22 | 1.3 | 1.4 | 1.48 | 1.57 | 1.65 | | | | |
| | | | | | | | A | B | C | D |

SETTING IDLE CURRENT (CURRENT DOWN)



Idle Current (STOP : Rotary Switch)

| SW No. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|------------|----|----|----|----|----|----|----|----|----|----|
| Current(%) | 28 | 32 | 37 | 41 | 45 | 49 | 53 | 57 | 62 | 65 |
| | | | | | | | A | B | C | D |

Example : When the drive current is set at 1.4A/Phase, idle current will be 0.7A/Phase at the switch position no. 5 (50%).

DIP SW FUNCTIONS



| No. | Indication | Mode | ON | OFF |
|-----|------------|------------------------|-----------------------------|-------------------|
| 1 | TEST | Initial system check | Rotating (60pps). | Always set to off |
| 2 | 2/1CK | Pulse mode | One pulse | Two pulse |
| 3 | C.D | Idle current reduction | Not active | Activated |
| 4 | L/HV | Motor drive voltage | *High speed and high torque | Standard |
| 5 | N/S | Low vibration | Low vibration drive | Standard drive |

※Please note heat of the motor when driving by high speed and a high torque.

5 Phase Stepping Motor Driver

MC-S7528P/S7528P-3 (Special order product)

S
series



RoHS

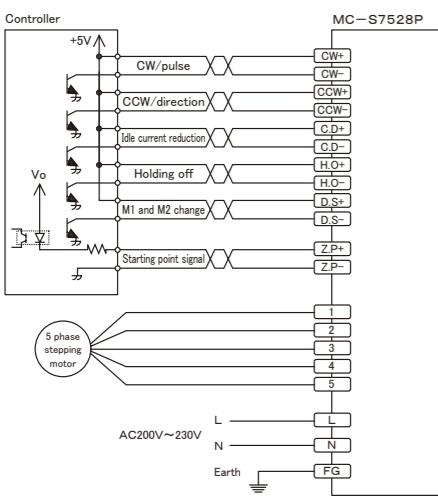
FEATURE

- Maximum drive current 2.8A/phase.
- It is 5 Phase-stepping motor driver of the AC200-230V input.
- Maximum resolution is 1/250 (125,000 pulse per rotation).
- Low vibration drive(Full or Half step).
- I/O uses the connector.

SPECIFICATION

| | |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name | 5 phase stepping motor driver |
| Model | MC-S7528P |
| Driving method | Micro step |
| Input power | AC200~230V ±10% 50/60Hz 3.5A Max. |
| Drive current | 2.8A/phase Max. |
| Division | MC-5528P 1, 2, 4, 5, 8, 10, 16, 20, 25, 40, 50, 80, 100, 125, 200, 250 MC-5528P-3 1, 2, 3, 6, 12, 18, 24, 32, 36, 48, 60, 72, 120, 160, 180, 240 |
| Maximum frequency | 500 kpps |
| Input signal | Optical-isolator input [1]:3~5V, [0]:-3~0.5V Input resistance CW, CCW:220Ω C.D, H.O, D.S:220Ω |
| Output signal (Z.P.) | Optical-isolator open corrector output Condition : DC30V or less, 50mA or less |
| Function | Pulse input mode selector , Automatic current reduction , Micro step angle select , Driving voltage select , Initial system check |
| Insulation resistance | The value is 50MΩ or more,that measured by DC500V Megger Between the AC input and the case. |
| Withstand voltage | It is not above even if AC1500V is impressed between the AC input and the case for one minute. |
| Operating temperature range | 0~40°C |
| Operating humidity range | 0~85% |
| Weight | 1.1kg |

SAMPLE WIRING DIAGRAM



MOTOR

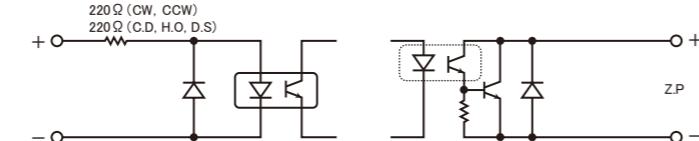
- 5/10 lead 5-Phase stepping motors such as Tamagawa-seiki or Oriental-motor.

See table below for the pin no. of the connector and color of motor leads.

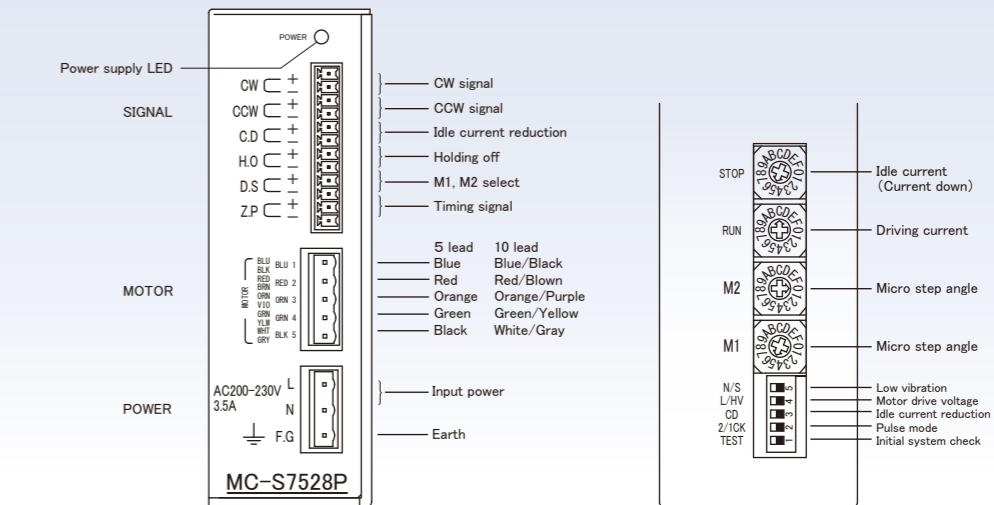
| Connector No. | 5 lead | 10 lead |
|---------------|--------|---------------|
| 1 | Blue | Blue/Black |
| 2 | Red | Red/Blown |
| 3 | Orange | Orange/Purple |
| 4 | Green | Green/Yellow |
| 5 | Black | White/Gray |

Note : Please use the wire rod of AWG18(0.75mm²) or more for connecting the motor.

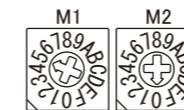
INPUT/OUTPUT CIRCUIT



NAME AND FUNCTION



SETTING MICROSTEP RESOLUTION



MC-S7528P

MC-S7528P-3

Micro Step Angle = $\frac{\text{Base Step Angle}}{\text{Division}}$

- ① When only one microstep angle is used, use M1 rotary switch to set the division. input terminal D.S shall not be connected or signal must be ZERO(0) state if it is connected.
② Input signal at D.S Terminal. Zero(0) = M1 division, One(1) = M2 division. Speed of Forward & Backward speed can be changed by this function.

SETTING DRIVE CURRENT

The desired drive current is obtained by setting RUN SW as follows.



Drive Current
(RUN : Rotary Switch)

| | | | | | | | | | | |
|------------|------|------|------|------|------|------|-----|------|-----|------|
| SW No. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Current(A) | 1.0 | 1.15 | 1.3 | 1.45 | 1.6 | 1.75 | 1.9 | 2.05 | 2.2 | 2.35 |
| A | B | C | D | E | F | | | | | |
| 2.5 | 2.65 | 2.8 | 2.95 | 3.1 | 3.25 | | | | | |

Example : Drive current = 2.8A/phase.

RUN SW = C

SETTING IDLE CURRENT (CURRENT DOWN)



Idle Current
(STOP : Rotary Switch)

| | | | | | | | | | | |
|------------|----|----|----|----|-----|----|----|----|----|----|
| SW No. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Current(%) | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 |
| A | B | C | D | E | F | | | | | |
| 75 | 80 | 85 | 90 | 95 | 100 | | | | | |

Example : When the drive current is set at 1.4A/Phase, idle current will be 0.7A/Phase at the switch position no. 5 (50%).

DIP SW FUNCTIONS



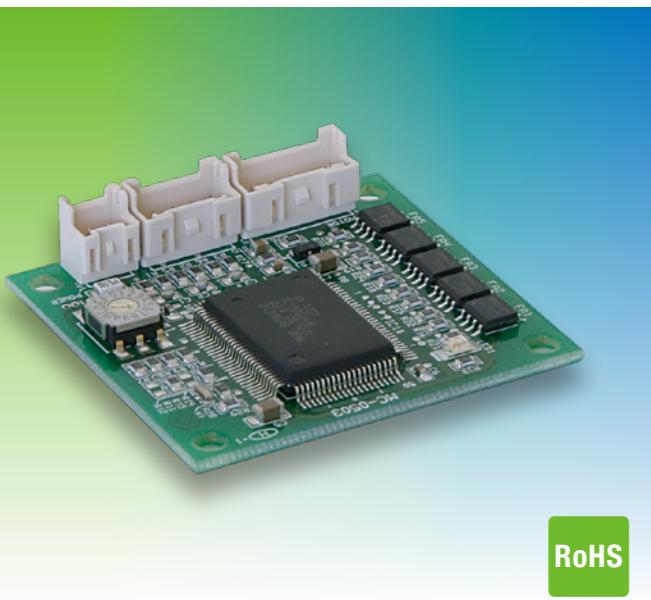
| No. | Indication | Mode | ON | OFF |
|-----|------------|------------------------|-----------------------------|-------------------|
| 1 | TEST | Initial system check | Rotating (60pps). | Always set to off |
| 2 | 2/1CK | Pulse mode | One pulse | Two pulse |
| 3 | C.D | Idle current reduction | Not active | Activated |
| 4 | L/HV | Motor drive voltage | *High speed and high torque | Standard |
| 5 | N/S | Low vibration | Low vibration drive | Standard drive |

*Please note heat of the motor when driving by high speed and a high torque.

DC5V Input 5 Phase Microstep Driver

MC-0503/0503-3

STEPPINGMOTOR DRIVER



FEATURE

- The MC-0503 is an ultra-small 5-phase micro stepping driver with 5 Vdc.
- *The drive motor is our V series 5-phase stepping motor.

SPECIFICATION

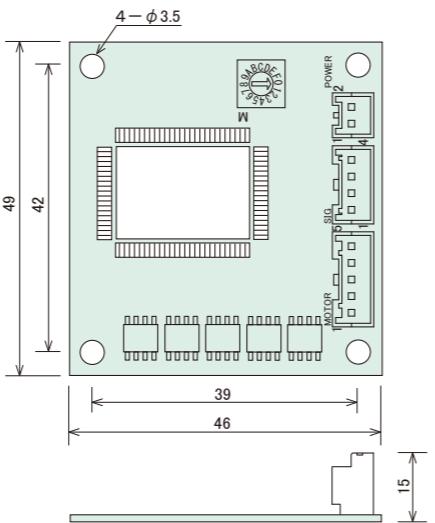
| | | | | | |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|---------------------------------------------------------------|-----------|----------------------------------------------------------------|
| Name | 5-phase stepping motor driver | | | | |
| Model | MC-0503, MC-0503-3 | | | | |
| Drive motor | Our V series 5-phase stepping motor | | | | |
| Driving method | Micro stepping driver | | | | |
| Input power | DC5V ±10% 1.8A Max. | | | | |
| Division | <table border="1"> <tr> <td>MC-0503</td><td>1, 2, 4, 5, 8, 10, 16, 20, 25, 40, 50, 80, 100, 125, 200, 250</td></tr> <tr> <td>MC-0503-3</td><td>1, 2, 3, 6, 12, 18, 24, 32, 36, 48, 60, 72, 120, 160, 180, 240</td></tr> </table> | MC-0503 | 1, 2, 4, 5, 8, 10, 16, 20, 25, 40, 50, 80, 100, 125, 200, 250 | MC-0503-3 | 1, 2, 3, 6, 12, 18, 24, 32, 36, 48, 60, 72, 120, 160, 180, 240 |
| MC-0503 | 1, 2, 4, 5, 8, 10, 16, 20, 25, 40, 50, 80, 100, 125, 200, 250 | | | | |
| MC-0503-3 | 1, 2, 3, 6, 12, 18, 24, 32, 36, 48, 60, 72, 120, 160, 180, 240 | | | | |
| Maximum frequency | 200 kpps | | | | |
| Inputsignal | C-MOS input [1]:0~1V, [0]:4~5V CW, CCW, H.O | | | | |
| Function | 2-pulse input system, Step angle change-over | | | | |
| Operating temperature range | 0 to 40°C (32~104°F) Non-freezing | | | | |
| Operating humidity range | 0 to 85% Non-condensing | | | | |
| Weight | 15g (0.53oz) | | | | |

V SERIES MOTOR SPECIFICATION

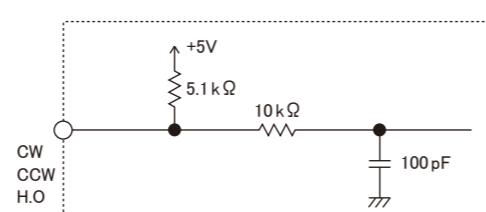
| Model | 02K-V523(Single axis), 02K-V523W(Both axes) |
|-------------------------|---------------------------------------------|
| Holding Torque (N·m) | 0.018 |
| Rated Current (A/phase) | 0.25 |
| Winding Resistance (Ω) | 9.0 |
| Rotor Inertia (gcm²) | 4.2 |
| Motor Length; L (mm) | 30.5 |
| Mass (g) | 70 |
| Size (mm) | 24□ |

*Conversion Table for Torque
(g·cm) = 980 × (N·m), (kg·cm) = 9.8 × (N·m)

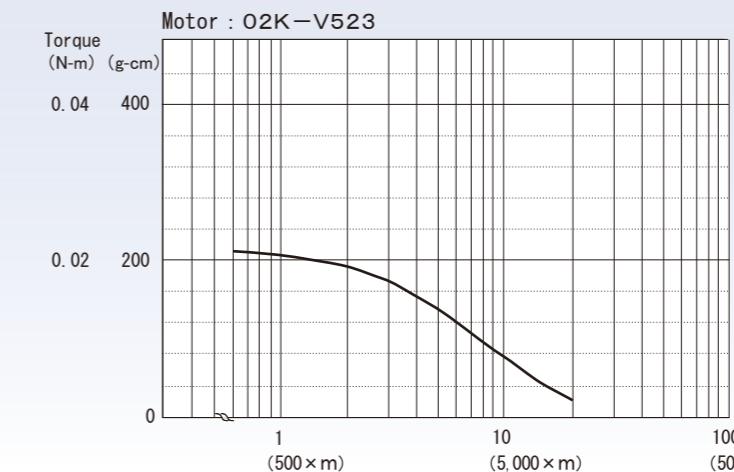
DIMENSIONS (unit:mm)



INPUT CIRCUIT

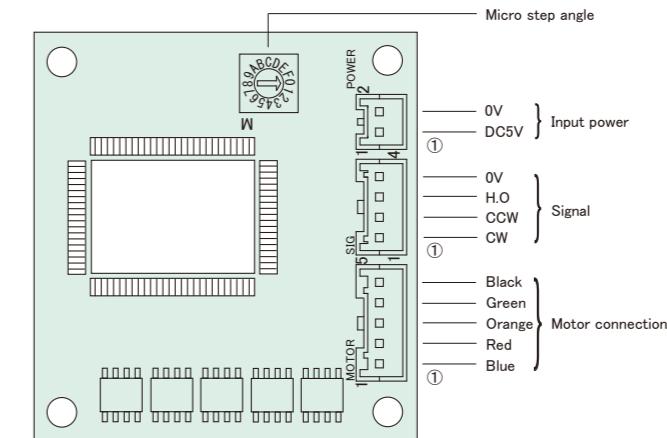


TORQUE CHARACTERISTIC



* m=MICROSTEP RESOLUTION
Ex.] m=1:FULL STEP
m=2:HALF STEP

NAME AND FUNCTION



SETTING MICROSTEP RESOLUTION



| MC-0503 | SW No. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---------|--------------|----|-----|-----|-----|-----|----|----|----|----|----|
| | Division (m) | 1 | 2 | 4 | 5 | 8 | 10 | 20 | 40 | 80 | 16 |
| | A | B | C | D | E | F | | | | | |
| | 25 | 50 | 100 | 125 | 200 | 250 | | | | | |

Ex.] m=1: Full step, m=2: Half step

| MC-0503-3 | SW No. | 0 | 1* | 2* | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|-----------|--------------|----|-----|-----|-----|-----|----|----|----|----|----|
| | Division (m) | 1* | 2* | 3 | 6 | 12 | 18 | 24 | 32 | 36 | 48 |
| | A | B | C | D | E | F | | | | | |
| | 60 | 72 | 120 | 160 | 180 | 240 | | | | | |

Micro Step Angle = $\frac{\text{Base Step Angle}}{\text{Division}}$
72 divided steps → 0.01 degree
※ Does not drive at the low vibration in this case.

5 Phase Stepping Motor Driver

MC-5M



UL standard recognition
CE marking

FEATURE

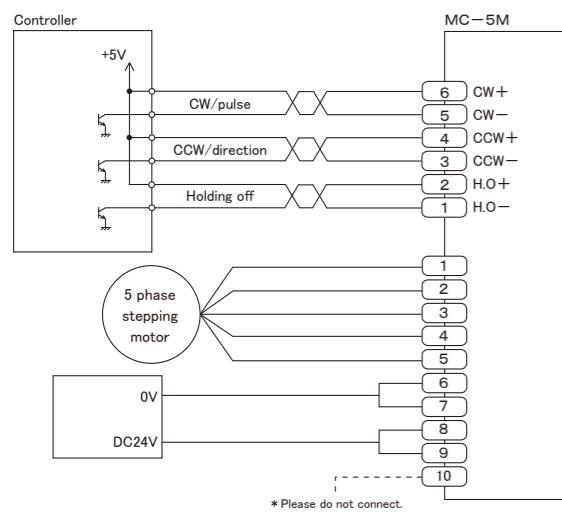
- Maximum drive current 1.4A/phase.
- Single power supply DC24-36V.
- Optical-isolator input.
- Automatic current reduction.
- Compact size driver.
- I am preparing two kinds of base boards so that an attachment variation can also be chosen.

*Optional Parts ; Wire assembled connector ▶ Page 50

SPECIFICATION

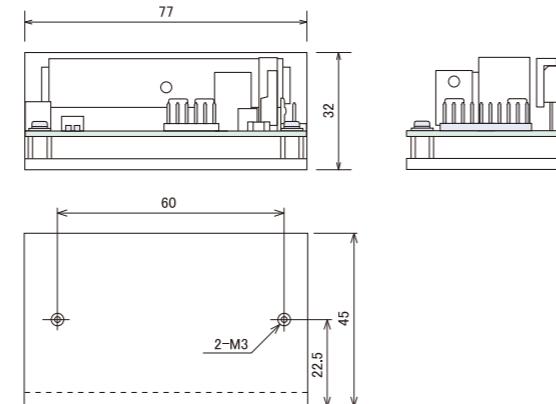
| | |
|-----------------------------|-----------------------------------------------------------------------------------------------------|
| Name | 5 phase stepping motor driver |
| Model | MC-5M |
| Drive method | Full / Half Step |
| Input power | DC20~40V 3A Max. |
| Drive current | 0.5A~1.4A/phase |
| Maximum frequency | 70 kpps |
| Input signal | Optical-isolator input [1]:4~8V, [0]:-8~0.5V Input resistance CW, CCW, H.O:390Ω |
| Function | Pulse input mode selector , Full/half step select , Automatic current reduction at motor standstill |
| Operating temperature range | 0~40°C |
| Operating humidity range | 0~85% |
| Weight | 90g |

SAMPLE WIRING DIAGRAM

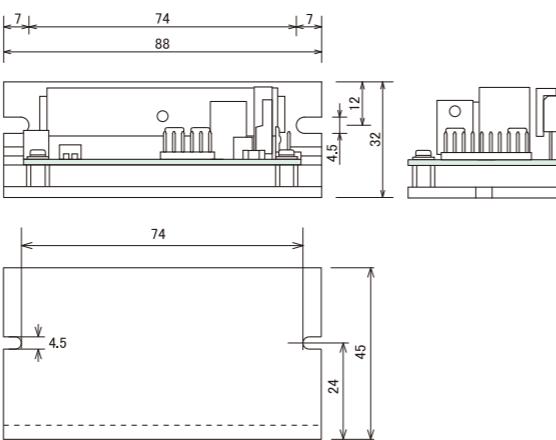


DIMENSIONS (unit:mm)

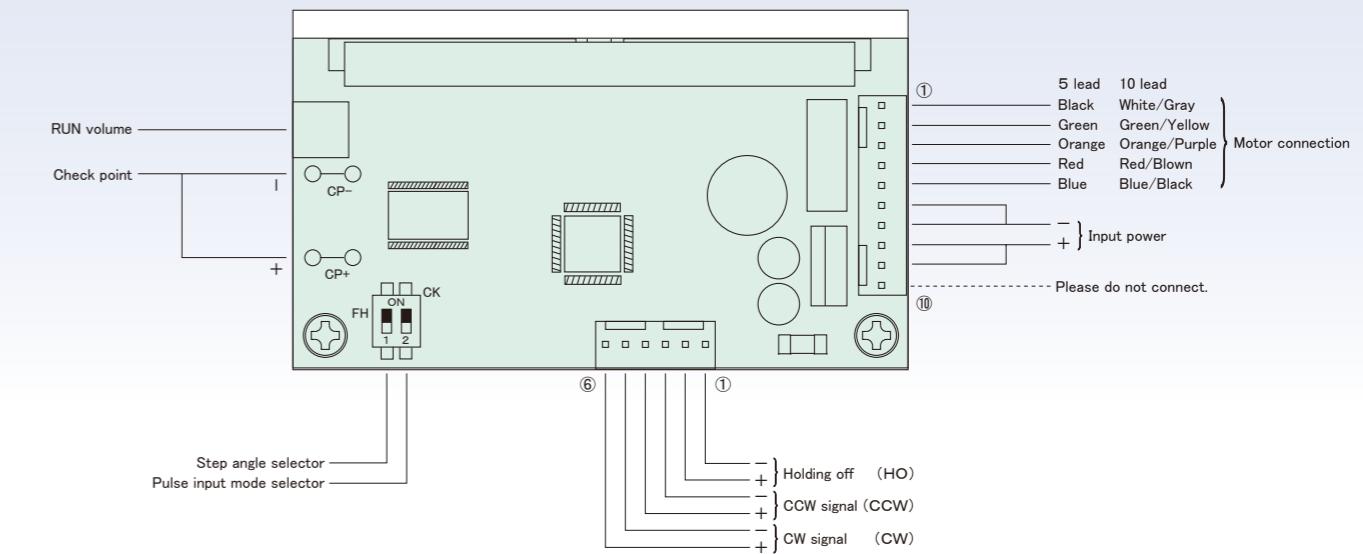
Type 1



Type 2



NAME AND FUNCTION



SETTING DRIVE CURRENT

To obtain the desired drive current, connect a potentiometer to CP(+) and use the following formula:
Potentiometer voltage(V) = Desired drive current × 2

Factory setting is 1.4A/phase.

- ① Turn RUN Volume Control all the way to the left before the system is powered.
- ② Insert the cw signal (or the ccw signal) with a frequency of 10 pps or more, slowly turn the run volume and adjust it to the calculated voltage value. (Caution: Motor starts to rotate once the signal is input)
- ③ At the Motor Standstill, the output current will be automatically reduced to 65% of the set current.

DIP SW FUNCTIONS

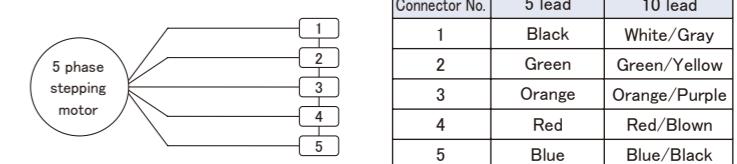


| No. | Mode | ON | OFF |
|-----|------------|-------------|-------------|
| 1 | Step angle | 0.72°/pulse | 0.36°/pulse |
| 2 | Pulse mode | One pulse | Two pulse |

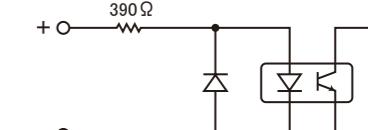
MOTOR

- 5/10 lead 5-Phase stepping motors such as Tamagawa-seiki or Oriental-motor.

See table below for the pin no. of the connector and color of motor leads.



INPUT CIRCUIT



5 Phase Stepping Motor Driver

MC-5528P/5528P-3

STEPPINGMOTOR DRIVER



RoHS

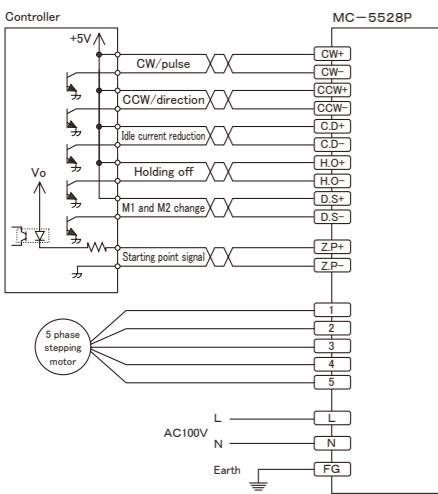
FEATURE

- Maximum drive current 2.8A/phase.
- It is 5 Phase-stepping motor driver of the AC100-115V input.
- Maximum resolution is 1/250 (125,000 pulse per rotation).
- Low vibration drive(Full or Half step). (Except MC-5528P-3)
- I/O uses the connector.

SPECIFICATION

| | |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name | 5 phase stepping motor driver |
| Model | MC-5528P , MC-5528P-3 |
| Driving method | Micro step |
| Input power | AC100~115V ±10% 50/60Hz 6.5A Max. |
| Drive current | 2.8A/phase Max. |
| Division | MC-5528P 1, 2, 4, 5, 8, 10, 16, 20, 25, 40, 50, 80, 100, 125, 200, 250 MC-5528P-3 1, 2, 3, 6, 12, 18, 24, 32, 36, 48, 60, 72, 120, 160, 180, 240 |
| Maximum frequency | 500 kpps |
| Input signal | Optical-isolator input [1]:4~8V , [0]:-8~0.5V Input resistance CW, CCW:300Ω C.D, H.O, D.S:390Ω |
| Output signal (Z.P.) | Optical-isolator open corrector output Condition ; DC30V or less, 50mA or less |
| Function | Pulse input mode selector , Automatic current reduction , Micro step angle select , Driving voltage select , Initial system check |
| Insulation resistance | The value is 50MΩ or more,that measured by DC500V Megger Between the AC input and the case. |
| Withstand voltage | It is not above even if AC1500V is impressed between the AC input and the case for one minute. |
| Operating temperature range | 0~40°C |
| Operating humidity range | 0~85% |
| Weight | 1.1kg |

SAMPLE WIRING DIAGRAM



MOTOR

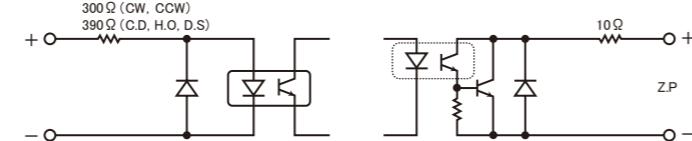
- 5/10 lead 5-Phase stepping motors such as Tamagawa-seiki or Oriental-motor.

See table below for the pin no. of the connector and color of motor leads.

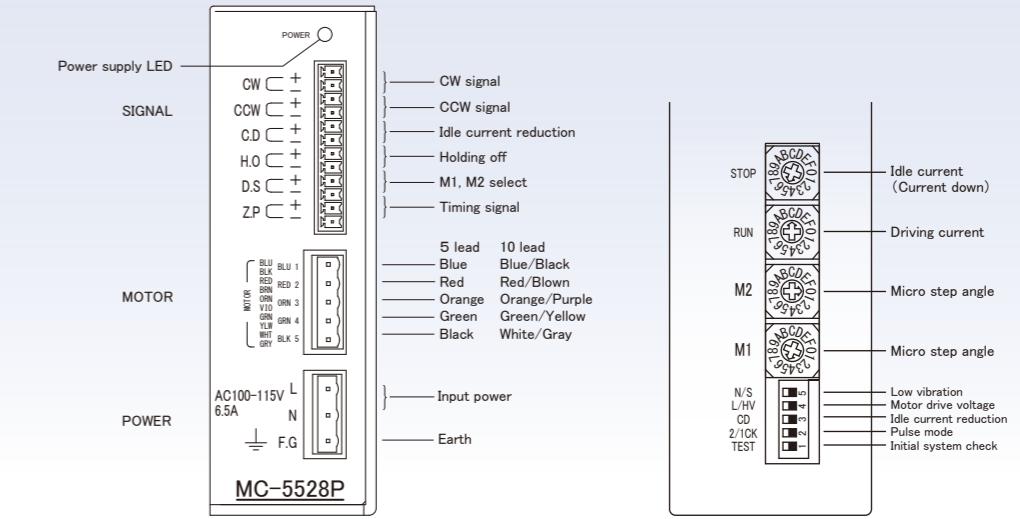
| Connector No. | 5 lead | 10 lead |
|---------------|--------|---------------|
| 1 | Blue | Blue/Black |
| 2 | Red | Red/Blown |
| 3 | Orange | Orange/Purple |
| 4 | Green | Green/Yellow |
| 5 | Black | White/Gray |

Note : Please use the wire rod of AWG18(0.75mm²) or more for connecting the motor.

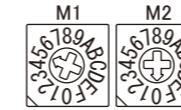
INPUT/OUTPUT CIRCUIT



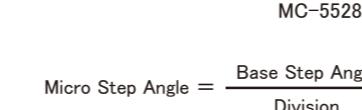
NAME AND FUNCTION



SETTING MICROSTEP RESOLUTION



| MC-5528P | SW No. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|----------|----------|----|-----|-----|-----|-----|----|----|----|----|----|
| | Division | 1 | 2 | 4 | 5 | 8 | 10 | 20 | 40 | 80 | 16 |
| | | | | | | | | | | | |
| | A | B | C | D | E | F | | | | | |
| | 25 | 50 | 100 | 125 | 200 | 250 | | | | | |



| MC-5528P-3 | SW No. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|------------|----------|----|-----|-----|-----|-----|----|----|----|----|----|
| | Division | 1* | 2* | 3 | 6 | 12 | 18 | 24 | 32 | 36 | 48 |
| | | | | | | | | | | | |
| | A | B | C | D | E | F | | | | | |
| | 60 | 72 | 120 | 160 | 180 | 240 | | | | | |

Micro Step Angle = $\frac{\text{Base Step Angle}}{\text{Division}}$
※ Does not drive at the low vibration in this case.

SETTING DRIVE CURRENT

The desired drive current is obtained by setting RUN SW as follows.



Drive Current
(RUN : Rotary Switch)

| SW No. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|------------|-----|------|-----|------|-----|------|-----|------|-----|------|
| Current(A) | 1.0 | 1.15 | 1.3 | 1.45 | 1.6 | 1.75 | 1.9 | 2.05 | 2.2 | 2.35 |
| A | B | C | D | E | F | | | | | |

Example : Drive current = 2.8A/phase.
RUN SW = C

SETTING IDLE CURRENT (CURRENT DOWN)

Idle current is established by setting STOP SW as follows.



Idle Current
(STOP : Rotary Switch)

| SW No. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|------------|----|----|----|----|----|----|----|----|----|----|
| Current(%) | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 |
| A | B | C | D | E | F | | | | | |

Example : When the drive current is set at 1.4A/Phase, idle current will be 0.7A/Phase at the switch position no. 5 (50%).

DIP SW FUNCTIONS



| No. | Indication | Mode | ON | OFF |
|-----|------------|------------------------|-----------------------------|-------------------|
| 1 | TEST | Initial system check | Rotating (60pps). | Always set to off |
| 2 | 2/ICK | Pulse mode | One pulse | Two pulse |
| 3 | C.D | Idle current reduction | Not active | Activated |
| 4 | L/HV | Motor drive voltage | *High speed and high torque | Standard |
| 5 | N/S | Low vibration | Low vibration drive | Standard drive |

*Please note heat of the motor when driving by high speed and a high torque.

5 Phase Stepping Motor



A TABLE MAJOR OF SPECIFICATION

8 K - M 5 6 6 □

- Holding torque
- Drive Current C:0.35A/phase S:0.75A/phase M:1.4A/phase G:2.8A/phase
- Space; Single Shaft W ; Dual Shafts
- Length Ex.] 6;60mm
- Size Ex.] 6;60□
- 5 Phase Stepping Motor

RoHS

※Conversion Table for Torque (g·cm) = 980 × (N·m), (kg·cm) = 9.8 × (N·m)

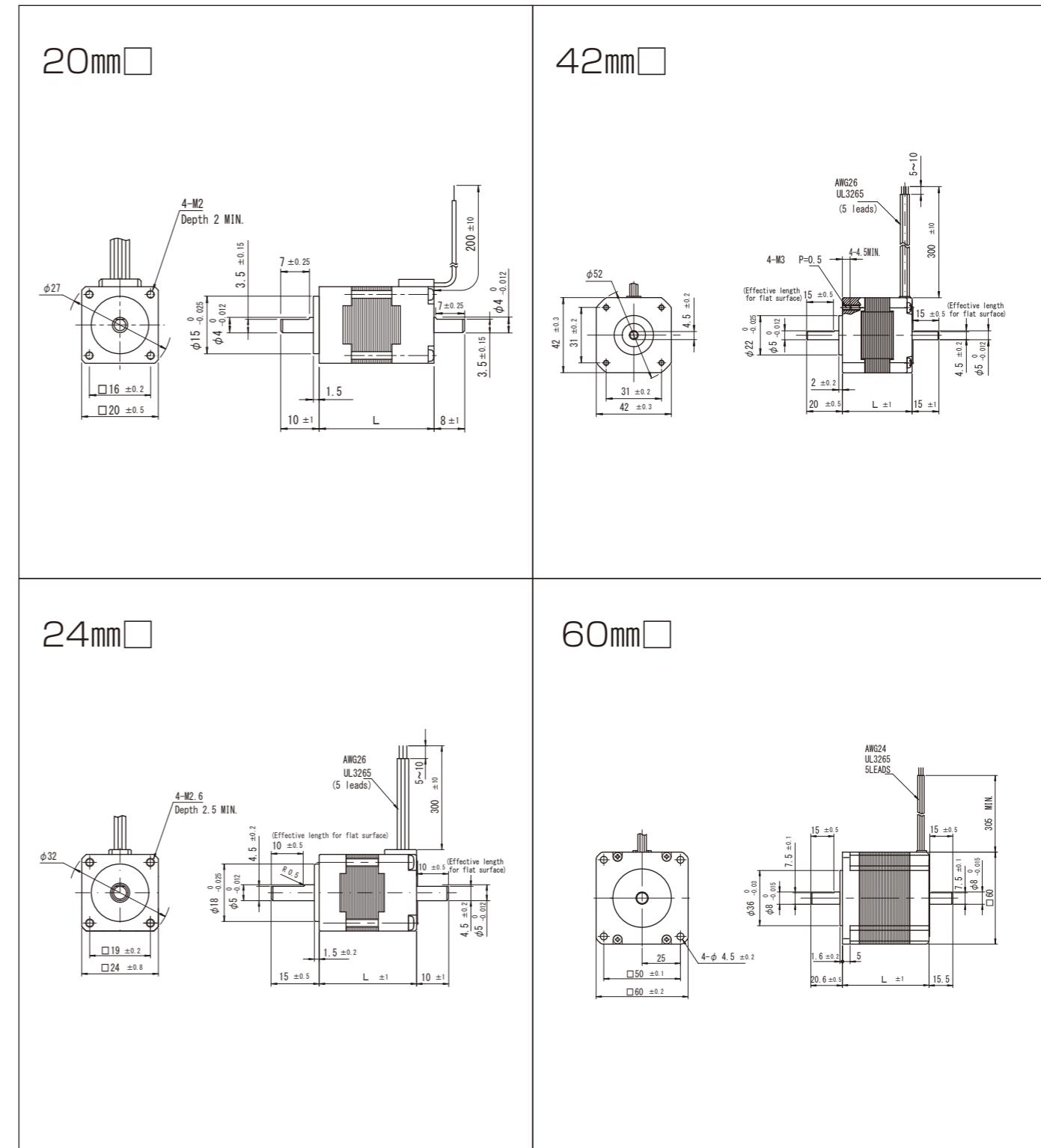
| Type Number (Dual Shafts add W) | Holding Torque N·m | Rated Current A/phase | Winding Resistance Ω | Rotor Inertia gcm ² | Motor Length; L mm | Mass | Size mm |
|------------------------------------|-----------------------|--------------------------|-------------------------|-----------------------------------|-----------------------|------|------------|
| 01K-C513 | 0.013 | 0.35 | 6.1 | 1.9 | 30 | 50g | 20□ |
| 02K-C515 | 0.024 | | 11.4 | 4 | 46.5 | 85g | 20□ |
| 02K-C523 | 0.018 | | 4.5 | 4.2 | 30.5 | 70g | 24□ |
| 04K-C525 | 0.029 | | 6.7 | 8.3 | 46.5 | 120g | 24□ |
| 1K-C543 | 0.13 | | 7.5 | 35 | 33 | 200g | 42□ |
| 2K-C544 | 0.18 | | 9.5 | 54 | 39 | 240g | 42□ |
| 3K-C545 | 0.24 | | 10.3 | 68 | 47 | 310g | 42□ |

| | | | | | | | |
|----------|-------|------|-----|-----|------|------|-----|
| 02K-S523 | 0.018 | 0.75 | 1.1 | 4.2 | 30.5 | 70g | 24□ |
| 04K-S525 | 0.029 | | 1.7 | 8.3 | 46.5 | 120g | 24□ |
| 1K-S543 | 0.13 | | 1.7 | 35 | 33 | 200g | 42□ |
| 2K-S544 | 0.18 | | 2.2 | 54 | 39 | 240g | 42□ |
| 3K-S545 | 0.24 | | 2.2 | 68 | 47 | 310g | 42□ |
| 4K-S564 | 0.46 | | 2.6 | 175 | 48.5 | 500g | 60□ |
| 8K-S566 | 0.82 | | 3.4 | 220 | 56.5 | 700g | 60□ |

| | | | | | | | |
|----------|------|-----|------|-----|------|-------|-----|
| 3K-M545 | 0.24 | 1.4 | 0.65 | 68 | 47 | 310g | 42□ |
| 4K-M564 | 0.46 | | 0.8 | 175 | 48.5 | 500g | 60□ |
| 8K-M566 | 0.82 | | 1.1 | 220 | 56.5 | 700g | 60□ |
| 16K-M569 | 1.53 | | 1.8 | 440 | 86.5 | 1.2kg | 60□ |

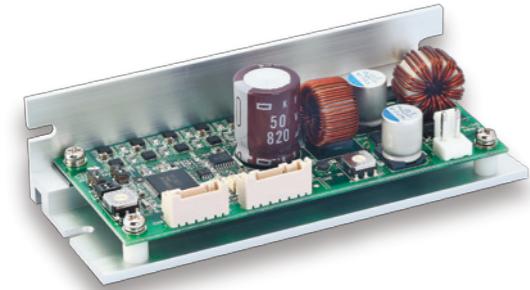
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|----------|------|-----|------|-----|------|-------|-----|
| 16K-G569 | 1.53 | 2.8 | 0.65 | 440 | 86.5 | 1.2kg | 60□ |
|----------|------|-----|------|-----|------|-------|-----|

DIMENSIONS (unit:mm)

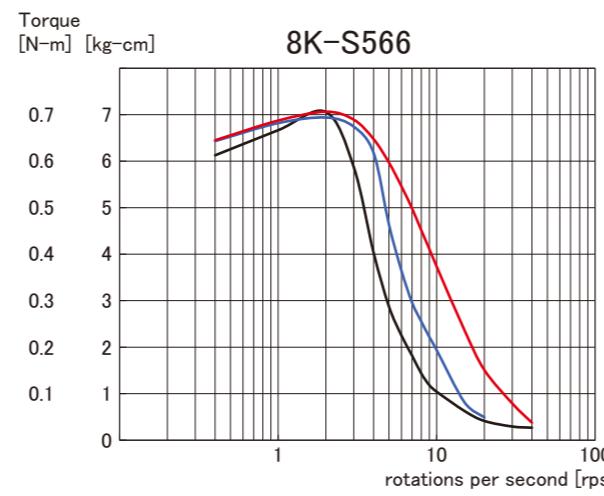
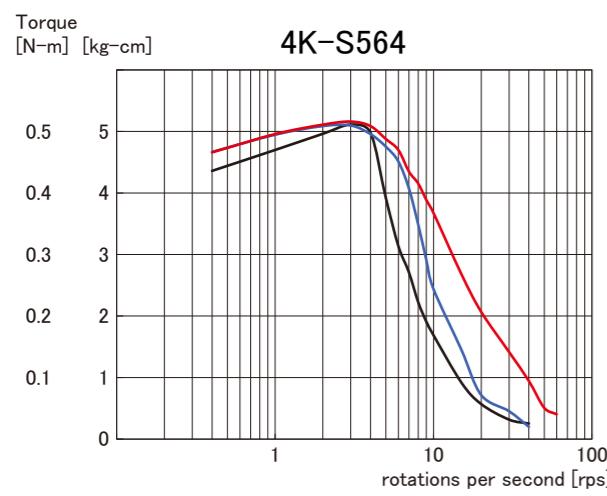
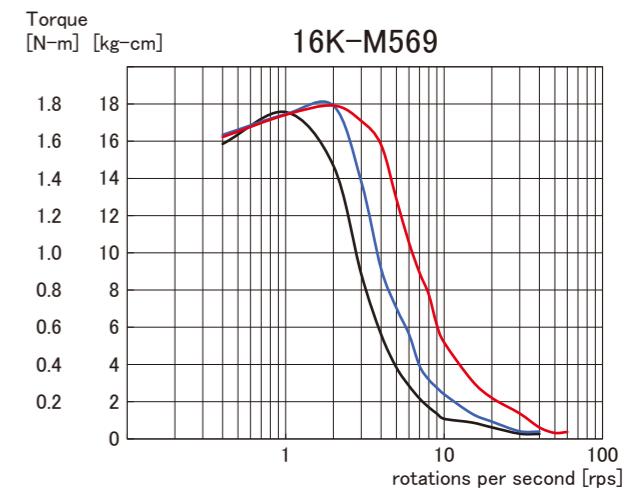
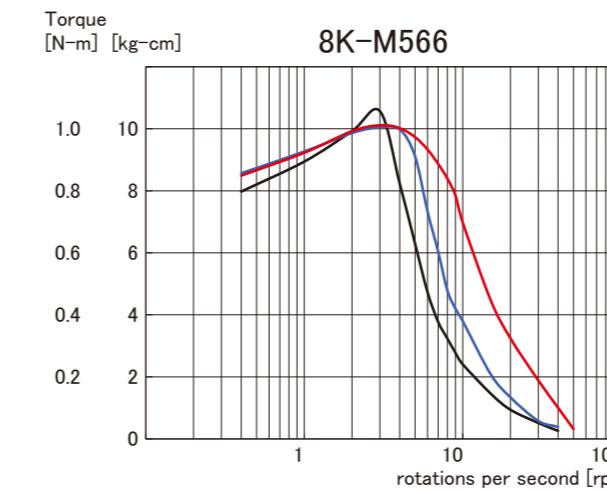
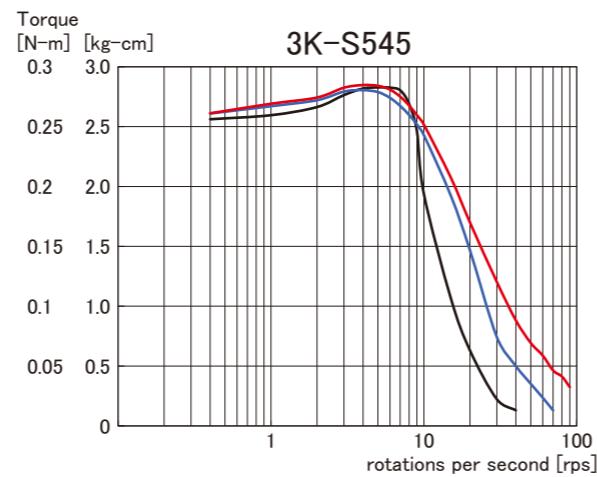
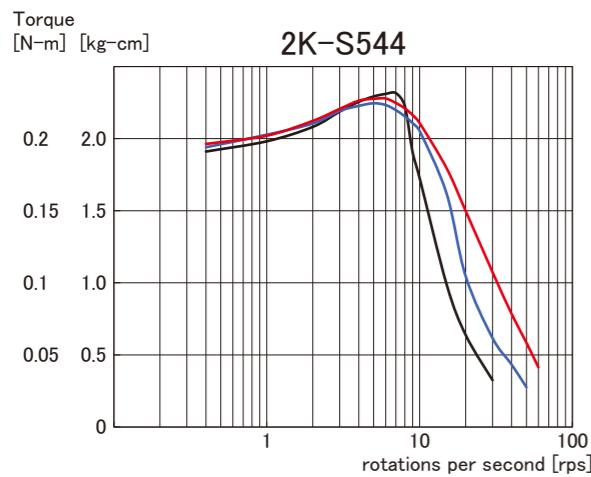
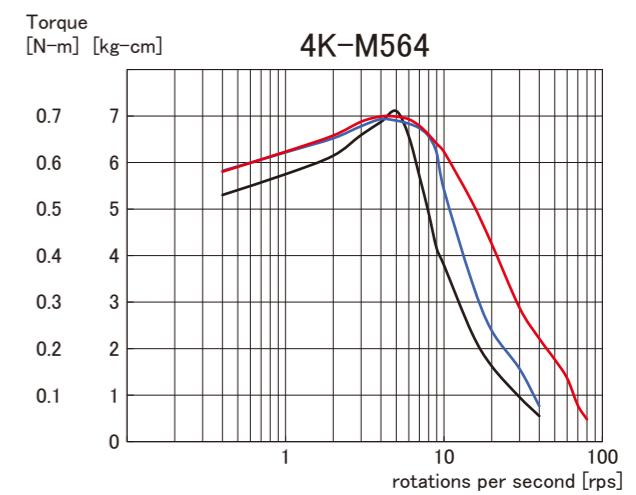
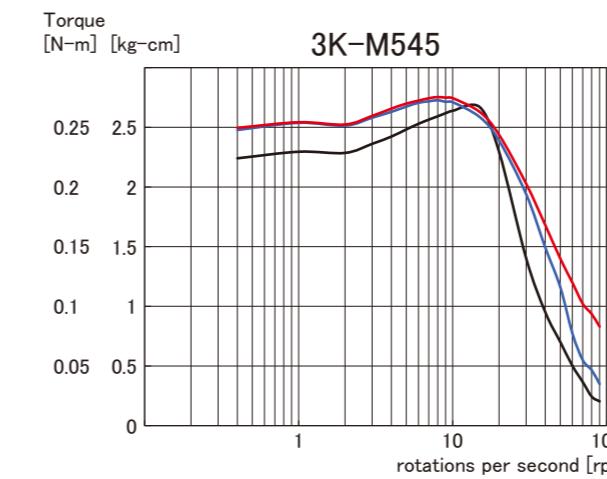
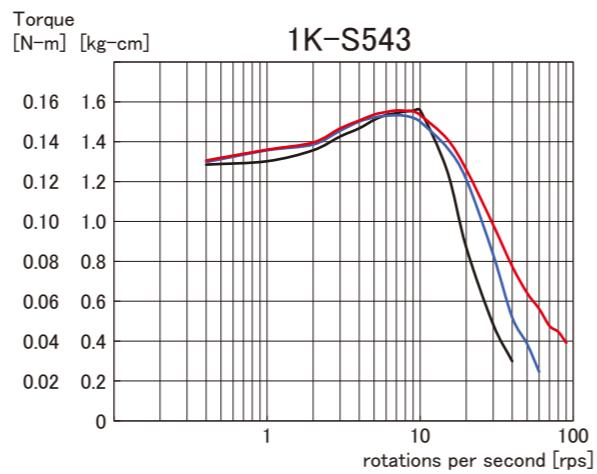


Torque Characteristics

MC-S0514-L-HS



- MC-S0514-L DC24V Drive
- MC-S0514L-HS Boosting Voltage s/w : 8
- MC-S0514L-HS Boosting Voltage s/w : F



Torque Characteristics

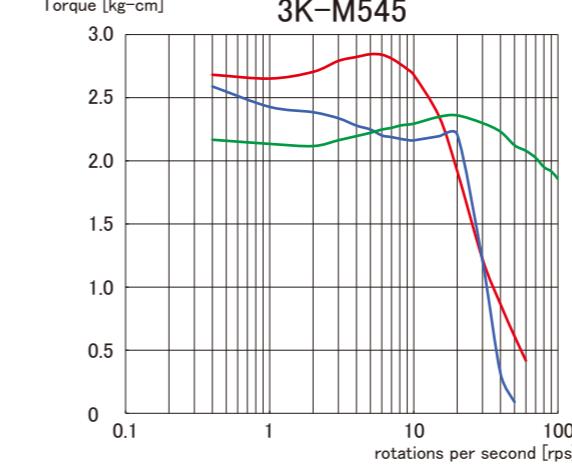
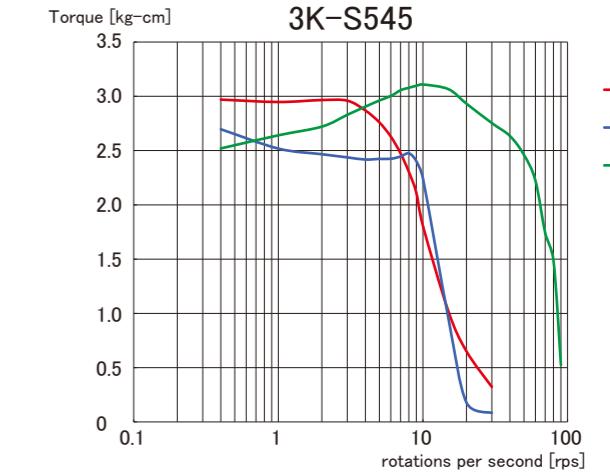
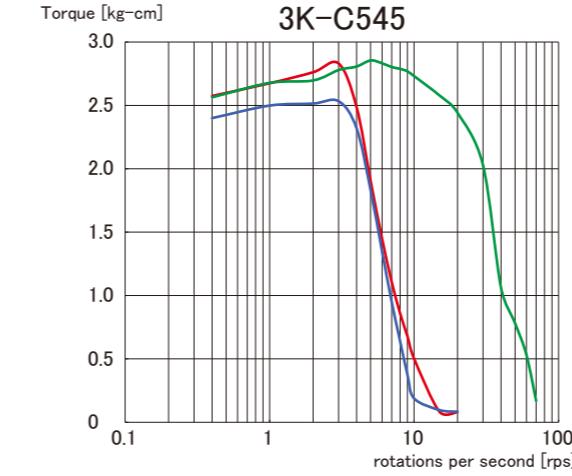
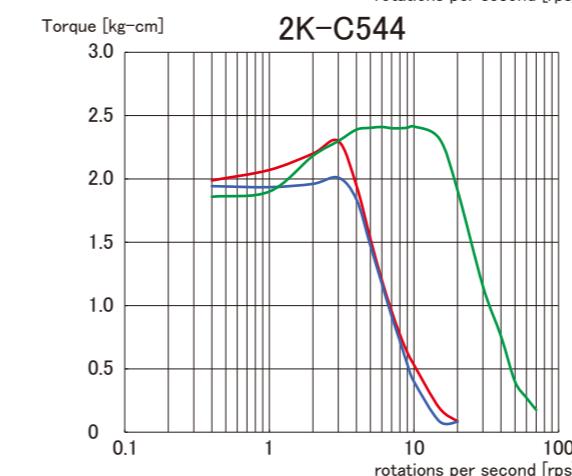
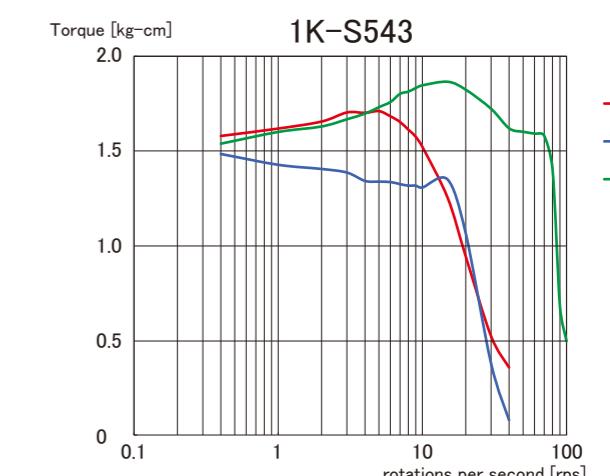
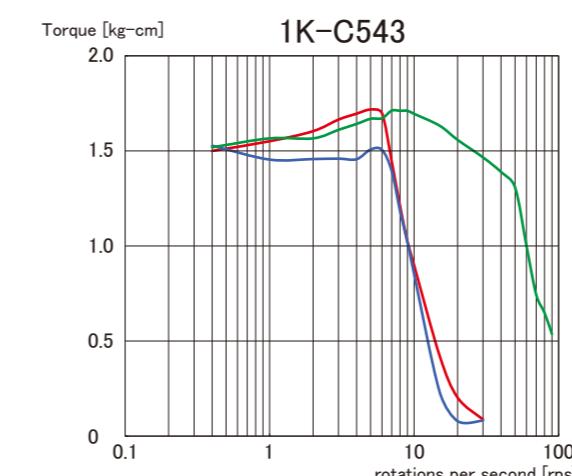
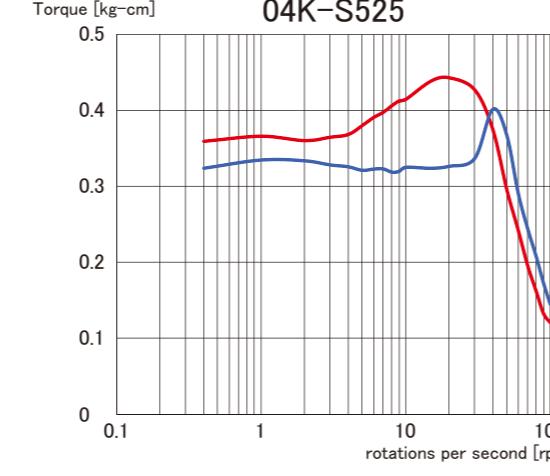
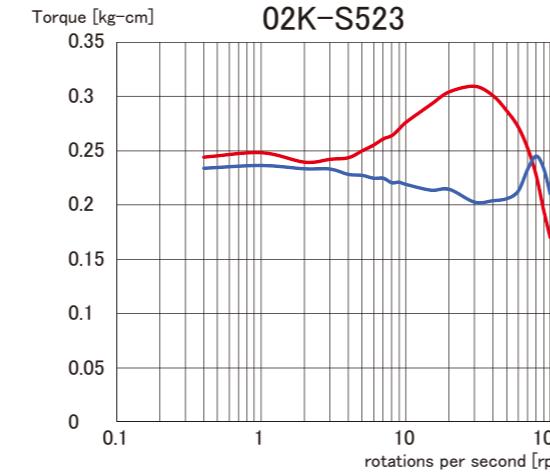
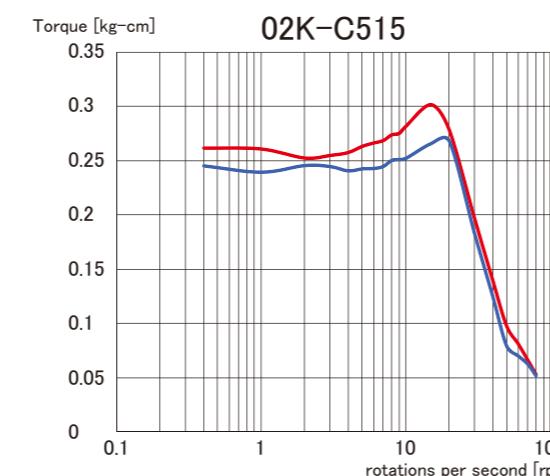
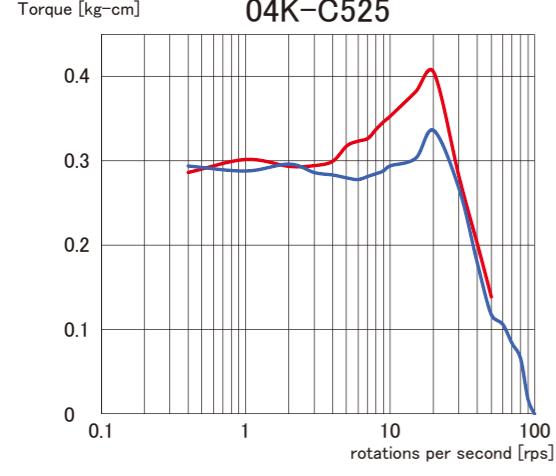
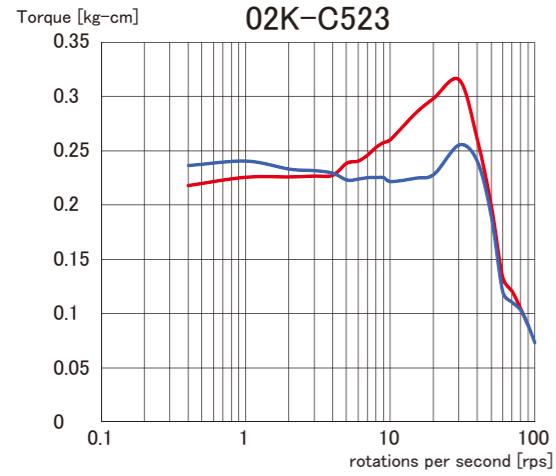
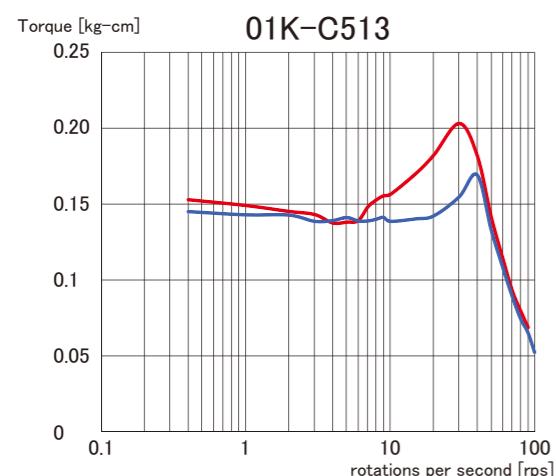
MC-S0514-L

MC-S5035

MC-S3ML

MC-S5ML

MC-S7514PCL



Torque Characteristics

MC-S0514-L

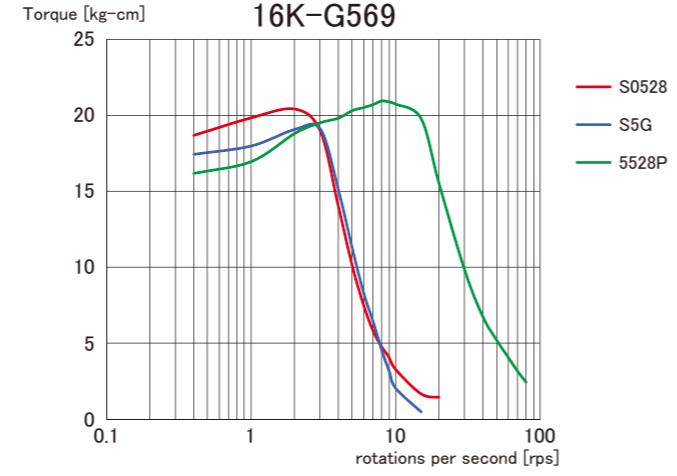
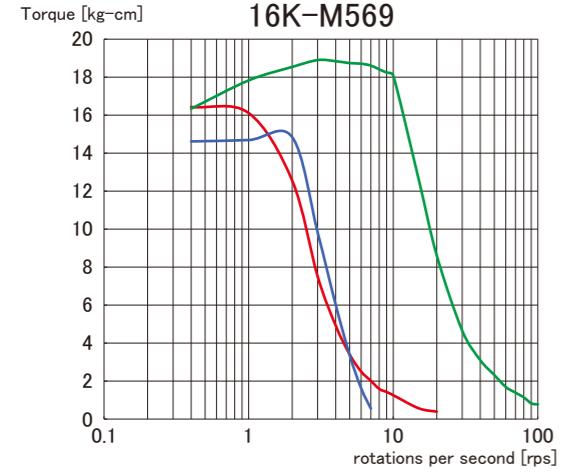
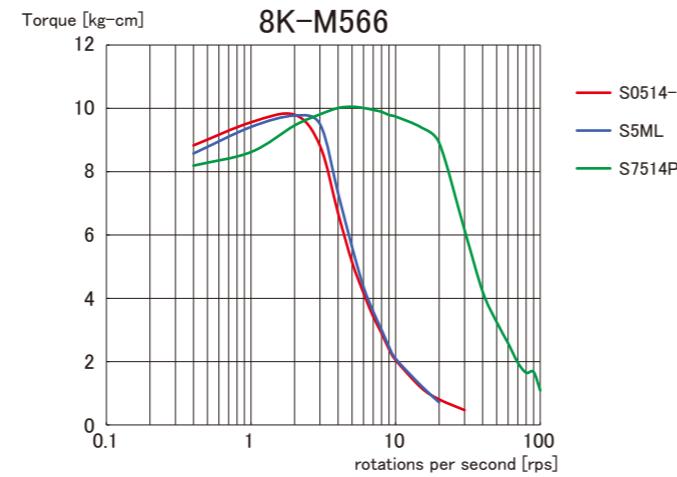
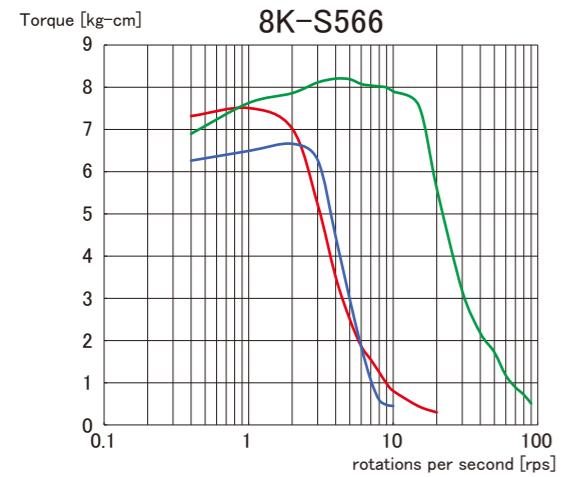
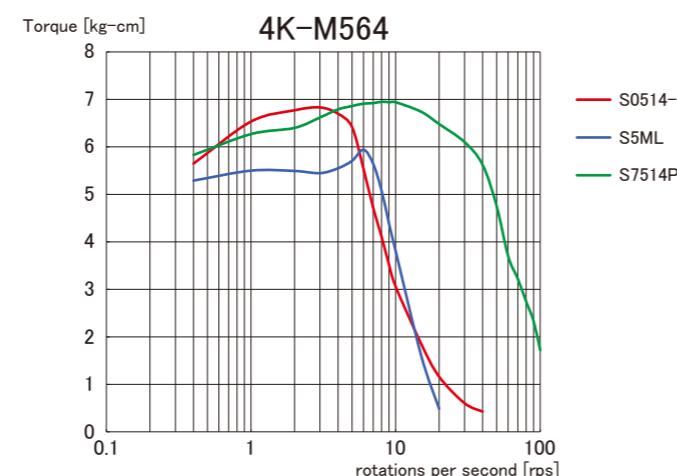
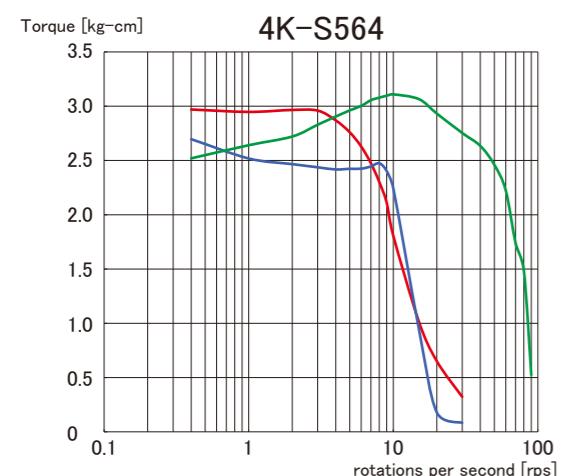
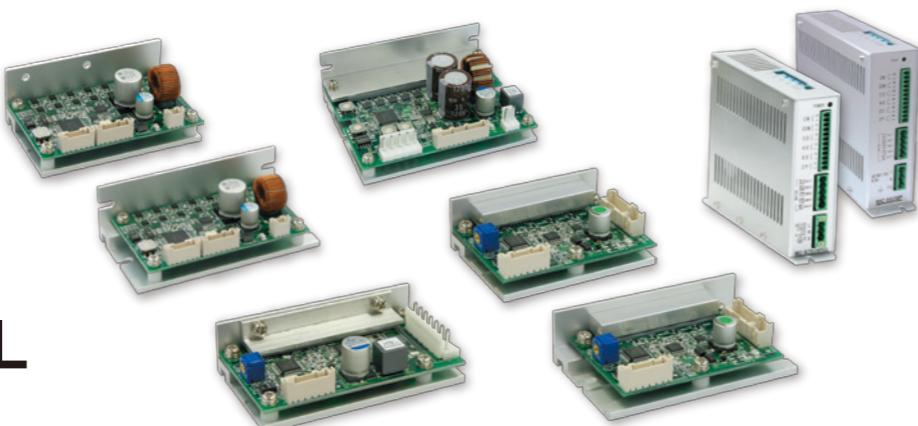
MC-S0528

MC-S5ML

MC-S5G

MC-S7514PCL

MC-5528P





Length: 600mm

| Model | Driver Model | Content of Set | | |
|-------------------|--------------|------------------------|-----------------------------------------------|-----------------------|
| S0514L-HS harness | MC-S0514L-HS | 1 signal wiring(AWG22) | 1 power supply wiring(AWG18) | 1 motor wiring(AWG22) |
| S0514-L harness | MC-S0514-L | 1 signal wiring(AWG22) | 1 power supply wiring(AWG22) | 1 motor wiring(AWG22) |
| S0514-2L harness | MC-S0514-2L | 2 signal wiring(AWG22) | 1 power supply wiring(AWG18) | 2 motor wiring(AWG22) |
| S0514-3L harness | MC-S0514-3L | 3 signal wiring(AWG22) | 1 power supply wiring(AWG18) | 3 motor wiring(AWG22) |
| S0514-4L harness | MC-S0514-4L | 4 signal wiring(AWG22) | 1 power supply wiring(AWG18) | 4 motor wiring(AWG22) |
| S0524-L harness | MC-S0524-L | 1 signal wiring(AWG22) | 1 power supply wiring(AWG20) | 1 motor wiring(AWG20) |
| S5035 harness | MC-S5035 | 1 signal wiring(AWG22) | 1 power supply wiring(AWG22) | 1 motor wiring(AWG22) |
| S0514-ZU harness | MC-S0514ZU | 1 signal wiring(AWG22) | 1 power supply wiring(AWG22) | 1 motor wiring(AWG22) |
| S0528 harness | MC-S0528 | 1 signal wiring(AWG22) | 1 power supply wiring(AWG18) | 1 motor wiring(AWG18) |
| S3ML harness | MC-S3ML | 1 signal wiring(AWG22) | 1 power supply wiring(AWG22) | 1 motor wiring(AWG22) |
| S5ML harness | MC-S5ML | 1 signal wiring(AWG22) | 1 power supply wiring(AWG22) | 1 motor wiring(AWG22) |
| S5G harness | MC-S5G | 1 signal wiring(AWG22) | 1 power supply wiring and motor wiring(AWG18) | |
| 5M harness* | MC-5M | 1 signal wiring(AWG22) | 1 power supply wiring and motor wiring(AWG22) | |

※Special order product