Programmable Motion Controller
EMP400 Series

The **EMP400** Series controllers allow easy programming using simple commands. The dual axis model provides coordinated moves via linear interpolation.
Various motion profiles can be achieved by using up to 32 sequence programs. 1 program can be dedicated as a STARTUP program.

Single axis model: **EMP401**   Dual axis model: **EMP402**

■ Features

Pulse Oscillation
Various operation commands are provided for positioning operation, return-to-home operation and dual axis linear interpolation functions. The operator only needs to set the parameters.

Sequence Function
A series of operation patterns can be programmed using dedicated commands. This is an ideal function for distributed system control.

I/O Control
General-purpose I/O signals are provided in addition to dedicated I/Os such as pulse output and limit-sensor input. Synchronization with peripherals is also possible.

Pulse Oscillation

Sequence Function

Axis-2 Driver

Axis-1 Driver

EMP402 Controller

Sensor

Step Motor

I/O Control

Step Motor

■ Function

Pulse Oscillation
● Fast Response Time
The time between a START signal input and a pulse output is 2 ms or less.

● High-Speed Positioning & Low Vibration
The jerk-limit control function allows you to set a shorter acceleration/deceleration time compared with the use of linear acceleration/deceleration patterns. This reduces the overall positioning time.
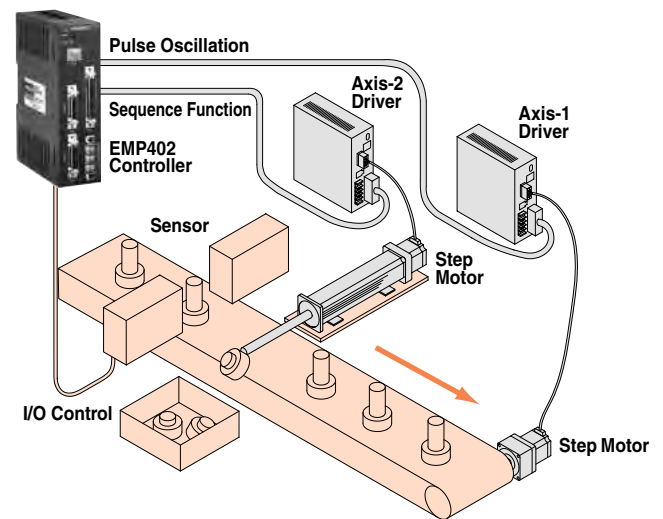
> **What is jerk-limit control?**
> This term refers to the acceleration/deceleration patterns used to ensure the smoothness of speed change at the start of operation or when the machine enters a constant-speed mode from an acceleration mode. Since speed change becomes more smooth, vibration is reduced.
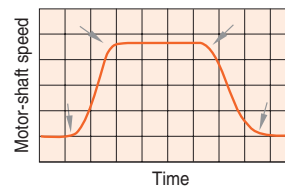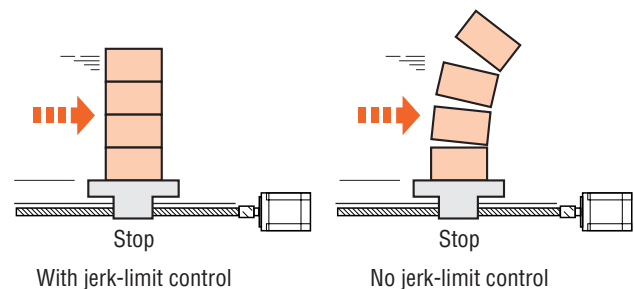
Motor Velocity Profile

Motor-shaft speed

Time

Effect of Type on Positioning Time

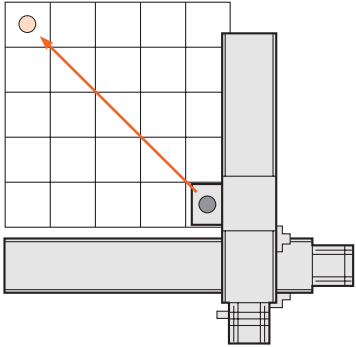Stop

Stop

With jerk-limit control

No jerk-limit control

● Positioning Operation

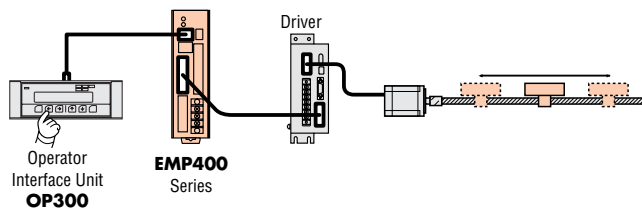Supports both incremental mode (travel amount) and absolute mode (absolute-position).

● Linear Interpolation Operation

Two axes are controlled simultaneously, allowing direct movement to a target position.

● Teaching Function

The amount of travel can be changed by jogging the load into position via the **OP300** interface.

● Continuous Operation

Pulse output continues until a specified input is received or a specified time is reached.

● Set Soft Home (Clears the current position)

The controller has an internal position counter. "0" position in this counter is soft home. The ability to set a voluntary position to soft home is available using RTNCR command.
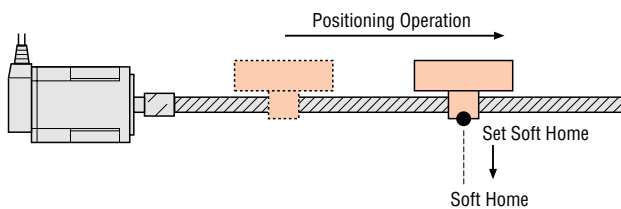
● Homing

Ability to seek for a sensor representing a positioning reference point (home) is available.
Also available is the ability to set an offset from the home position.

High-speed return (three-sensor mode)

Using a predetermined sequence, the mechanical unit returns home at high speed from any position with three sensors monitoring the current position.

Since it's possible to specify the direction in which the home sensor is entered, backlash error doesn't occur in applications where positioning accuracy is critical.
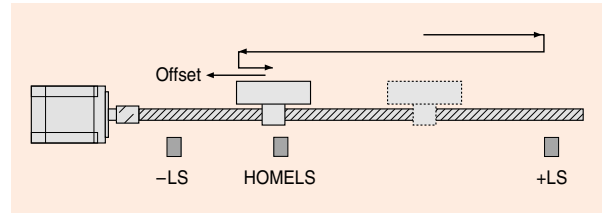
Constant-speed return (two-sensor mode)

The mechanical unit returns home at a constant speed. This mode is effective when a compact slider is operated, since the stroke can be fully utilized.
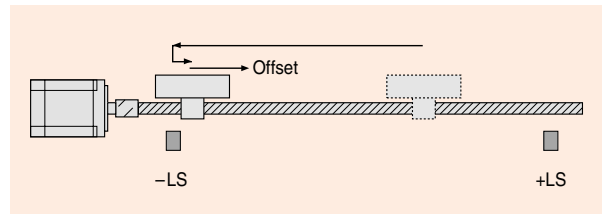
● Speed Change on the Fly

Speed can be changed on the fly during continuous operation.
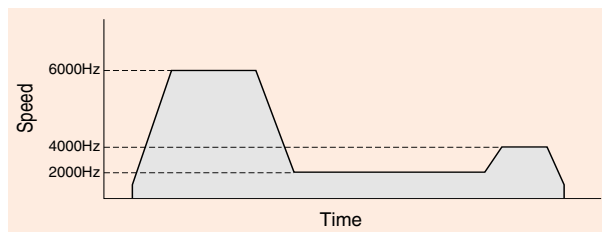
● A Choice of Acceleration/Deceleration Patterns

Each operation can be programmed using linear patterns or jerk-limit control.

● Distance Options

Set travel amount using various scaling units such as pulses, millimeters, or degrees.

Stepping Motors

Introduction

AS

AS PLUS

ASC

RK

CRK II

CSK

PMC

UMK

CSK

PK/PV

PK

UI2120G

EMP401 EMP402

SG8030J

SMK

Closed Loop αSTEP
AC Input
DC Input

Motor & Driver Packages
5-Phase Microstep
AC Input
DC Input
5-Phase Full/Half
DC Input
2-Phase Full/Half
AC Input
DC Input

2-Phase Stepping Motors
without Encoder
with Encoder

Driver
with Indexer

Controllers

Low-Speed Synchronous Motors

Accessories

Before Using a Stepping Motor

Sequence Function

Connect a motor for transferring products to axis 1, another motor for ejecting nonconforming products to axis 2, and a sensor for detecting the height of transferred products to one of the general-purpose inputs.

EMP402 Controller
Axis-2 Driver
Axis-1 Driver
Sensor∗
Step Motor
Step Motor

∗ Normally closed type sensors are used.
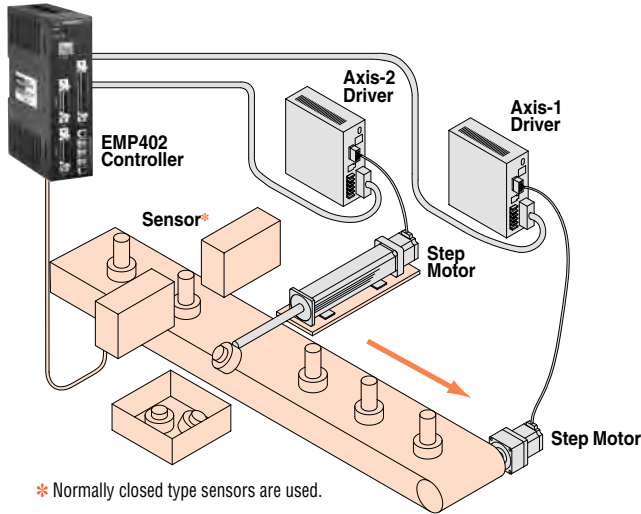
● Application Description

① Transfer products via an index move of 30,000 pulses (axis 1).
② Detect the height of the product using the sensor (general-purpose input 1).
③ Return to ① if the detection result is acceptable.
④ If the detection result is not acceptable, perform an index move of 30,000 pulses and eject the nonconforming product (axis 2). Return to ② and perform acceptability judgment for the next product.

Sample Code for Application Example

```
   [ 1] V1 10000      ; Axis 1 (transfer)    Operating speed 10 kHz
   [ 2] D1 +30000     ; Axis 1 (transfer)    Travel amount 30,000 pulses
①→[ 3] INC1          ; Axis 1 (transfer)    Incremental positioning operation
   [ 4] DELAY 0.5     ; Wait for 0.5 sec.
②③→[ 5] CJMP 1,0,3    ; Acceptability judgment (general-purpose input 1 = sensor)
                      ; OFF = Go to step [3] if OK
                      ; ON = Go to next step if NG
④→[ 6] INC1          ; Axis 1 (transfer)    Incremental positioning operation
   [ 7] DELAY 0.5     ; Wait for 0.5 sec.
   [ 8] V2 5000       ; Axis 2 (ejection)    Operating speed 5,000 Hz
   [ 9] D2 +1000      ; Axis 2 (ejection)    Travel amount 1,000 pulses
   [10] ABS2          ; Axis 2 (ejection)    Absolute positioning operation
   [11] D2 0          ; Axis 2 (ejection)    Travel amount 0 pulse
   [12] ABS2          ; Axis 2 (ejection)    Absolute positioning operation
   [13] JMP 5         ; Jump to step [5]
```

I/O Control

In addition to the signals for controlling the **EMP400** series (e.g., start, emergency stop, ready), a full range of other signals are available, including those necessary for motor control (e.g., pulse, alarm, limit sensor, home sensor) and general-purpose I/Os.

Control I/O (Dedicated)

START Input
E-STOP Input
READY Output
MOVE Output
END Output
etc.
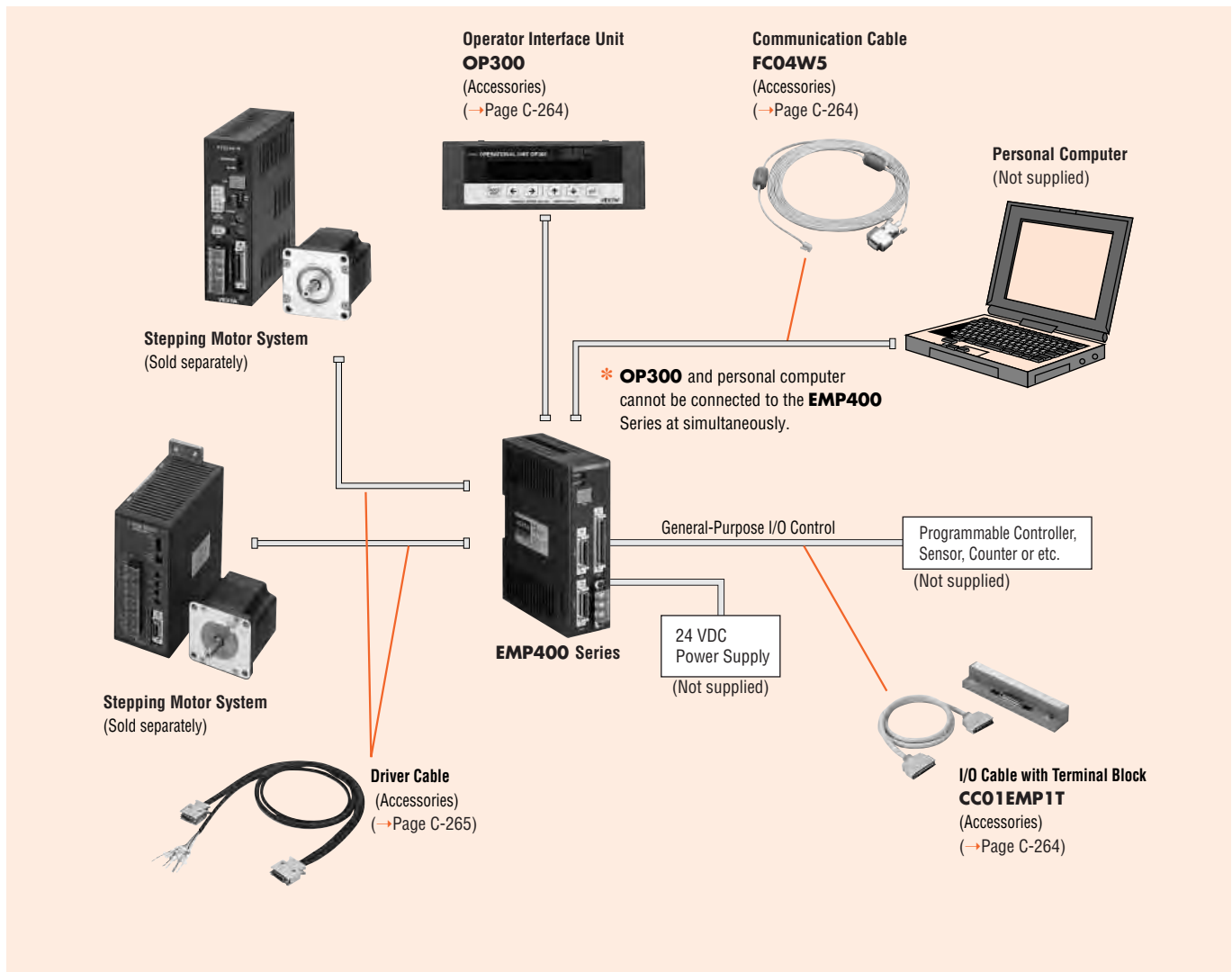
Motor Control I/O (Dedicated)

PULSE Output
DIRECTION Output
CCR Output
ALARM Input
END Input
TIMING Input
HOMELS Input
SLIT Input
etc.

General Purpose I/O

8 inputs
6 outputs
These signals can be easily controlled using conditional branching and timer processing.

■ System Configuration

Operator Interface Unit
OP300
(Accessories)
(→Page C-264)

Communication Cable
FC04W5
(Accessories)
(→Page C-264)

Personal Computer
(Not supplied)

Stepping Motor System
(Sold separately)

* **OP300** and personal computer
cannot be connected to the **EMP400**
Series at simultaneously.

General-Purpose I/O Control

Programmable Controller,
Sensor, Counter or etc.
(Not supplied)

EMP400 Series

24 VDC
Power Supply
(Not supplied)

Stepping Motor System
(Sold separately)

Driver Cable
(Accessories)
(→Page C-265)

I/O Cable with Terminal Block
CC01EMP1T
(Accessories)
(→Page C-264)

■ Product Number Code

EMP40 1 - 1

Connector
1 : Without connectors
2 : With connectors

Number of axes
1 : Single axis
2 : Dual axis

EMP400 Series

■ Product Line

Type	Number of Axes	Connector
EMP401-1	Single axis	Without connectors
EMP401-2		With connectors
EMP402-1	Dual axis	Without connectors
EMP402-2		With connectors

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AS

AS PLUS

ASC

RK

CRKII

CSK

PMC

UMK

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UI2120G

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Accessories

Closed Loop αSTEP
AC Input   DC Input

Motor & Driver Packages
5-Phase Microstep   5-Phase Full/Half
AC Input   DC Input   DC Input

2-Phase Full/Half
AC Input   DC Input

2-Phase Stepping Motors
without   with
Encoder   Encoder

Driver
with Indexer

Controllers

Low-Speed
Synchronous
Motors

Before Using
a Stepping
Motor

■ Command List

Command		Description
Motor control	ABS	Perform the positioning operation with the absolute position specified.
	INC	Perform the positioning operation with the relative position specified.
	MHOME	Perform the return to mechanical home operation.
	SCAN	Perform continuous operation.
	RESET	Reset the software.
	RTNCR	Set the current position to 0 (clear).
	RUN	Execute the sequence program.
	S	Decelerate the motor to a stop.
Data setting	D	Set the travel amount and positioning data.
	DOWEL	Set the operating intervals (dwell time).
	H	Set the direction of rotation.
	OFS	Set the offset travel amount.
	RAMP	Set the acceleration/deceleration pattern and jerk limit time.
	T	Set the acceleration/deceleration rate.
	V	Set the operating speed.
	VS	Set the starting speed.
Program control	CJMP	Jump to a specified step when a given condition is satisfied.
	JMP	Jump to a specified step.
	DELAY	Set the delay time.
	MU	Set parallel processing.
	LOOP	Set the loop.
	ENDL	End the loop section.
	END	End the sequence program.
	IN	Wait for input.
	OUT	Control the general-purpose output.
Hardware setting	ACTL	Switch the logic setting for the sensor and alarm.
	EEN	Set the use of END input.
	ETIME	Set the END output time.
	ID	Perform the initial setting for a linear motion product.
	PULSE	Set the pulse-output mode.
	SEN	Set the home-detection mode.
	TIM	Set the use of TIM input and SLIT input.
	UNIT	Set the unit for travel amount.
Others	EDIT	Edit the sequence program.
	DEL	Delete the sequence program.
	DWNLD	Download the sequence program.
	UPLD	Upload the sequence program.
	R	Check the system conditions.

■ Sample Programs

Sample. 1   Positioning operation

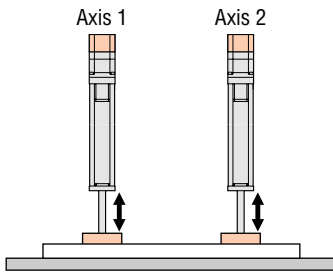|	
0 pulse 11,000 pulses	
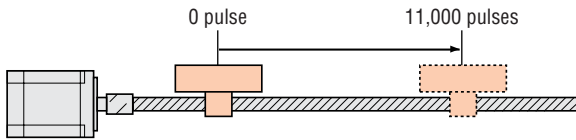
[1] VS1 500   ; Starting speed   500 Hz
[2] V1 1000   ; Operating speed   1,000 Hz
[3] T1 30.0   ; Acceleration/deceleration rate   30.0 ms/kHz
[4] D1 +11000   ; Travel amount   11,000 pulses
[5] INC1   ; Execute relative positioning operation
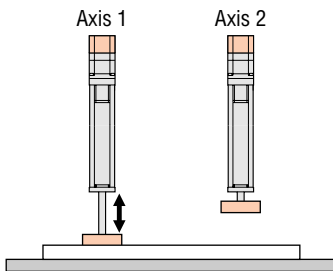
Sample. 2   Inputting multiple operation patterns

Simultaneous positioning of two axes
Axis 1   Axis 2

Axis 2 moves after axis 1 moves.
Axis 1   Axis 2

Seq 99   ; Hardware Setting
[1] UNIT1 0.02,1 ; Axis 1   Change to travel amount mm
[2] UNIT2 0.02,1 ; Axis 2   Change to travel amount mm

Seq 1   ; 2 axis execute at same time
[1] V1 1000   ; Axis 1   Operating speed 1,000 Hz
[2] D1 +50   ; Axis 1   Travel amount 50 mm
[3] D2 +50   ; Axis 2   Travel amount 50 mm
[4] ABSC   ; Axes 1, 2   Execute absolute positioning operation
[5] DELAY 1.0   ; Pause at 1-second internal timer
[6] D1 0   ; Axis 1   Travel amount 0 mm
[7] D2 0   ; Axis 2   Travel amount 0 mm
[8] ABSC   ; Axes 1, 2   Execute absolute positioning operation

Seq 2   ; After axis 1 executes, axis 2 executes
[1] V1 1000   ; Axis 1   Operating speed 1,000 Hz
[2] D1 +50   ; Axis 1   Travel amount 50 mm
[3] ABS1   ; Axis 1   Execute absolute positioning operation
[4] D1 0   ; Axis 1   Travel amount 0 mm
[5] ABS1   ; Axis 1   Execute absolute positioning operation
[6] V2 2000   ; Axis 2   Operating speed 2,000 Hz
[7] D2 +50   ; Axis 2   Travel amount 50 mm
[8] ABS2   ; Axis 2   Execute absolute positioning operation
[9] D2 0   ; Axis 2   Travel amount 0 mm
[10] ABS2   ; Axis 2   Execute absolute positioning operation

Sample. 3   Positioning using a sensor

Continuous operation
until sensor detection

Sensor
→Connected to
general-purpose input 1
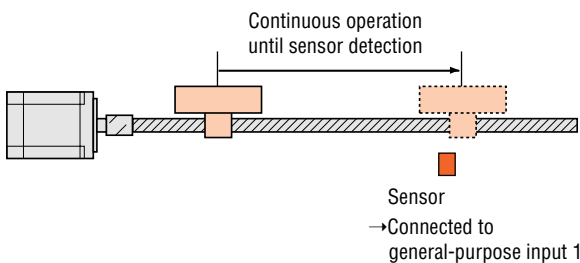
[1] VS1 500   ; Starting speed   500 Hz
[2] V1 20000   ; Operating speed   20,000 Hz
[3] T1 30.0   ; Acceleration/deceleration rate   30.0 ms/kHz
[4] H1 +   ; Direction of rotation   + (CW direction)
[5] SCAN1   ; Start continuous operation
[6] IN 1,1   ; General-purpose input 1   Waiting for ON
[7] S1   ; Decelerate to a stop

Sample. 4   Multistep speed-change operation

① Continuous operation at 10,000 Hz
② Decelerate to 5,000 Hz upon sensor detection
③ Decelerate to a stop after three seconds

Sensor→ Connected to general-purpose input 1

10,000Hz
5,000Hz
Motor operation
General-purpose Input 1   ON   OFF   3 sec.
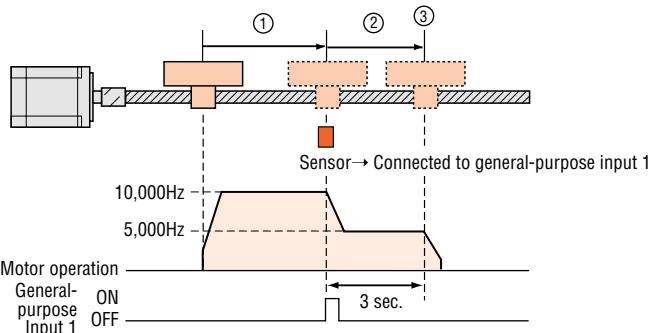
[1] VS1 500   ; Starting speed   500 Hz
[2] V1 10000   ; Operating speed   10,000 Hz
[3] T1 30.0   ; Acceleration/deceleration rate   30.0 ms/kHz
[4] H1 +   ; Direction of rotation   + (CW direction)
[5] SCAN1   ; Start continuous operation
[6] IN 1,1   ; General-purpose input 1   Waiting for ON
[7] V1 5000   ; Decelerate to 5,000 Hz
[8] DELAY 3.0   ; Wait time 3 seconds
[9] S1   ; Decelerate to a stop

Stepping Motors

Introduction

AS

AS PLUS

ASC

RK

CRKⅡ

CSK

PMC

UMK

CSK

PK/PV

PK

UI2120G

EMP401
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Accessories

Closed Loop αSTEP
AC Input
DC Input

Motor & Driver Packages
5-Phase Microstep
AC Input
DC Input

5-Phase Full/Half
DC Input

2-Phase Full/Half
AC Input
DC Input

2-Phase Stepping Motors
without Encoder
with Encoder

Driver
with Indexer

Controllers

Low-Speed Synchronous Motors

Before Using a Stepping Motor

■ Specifications

|					
Program	Number of programs	32			
	Capacity	1,000 commands			
	Input method	Command input via terminal program			
Oscillator Specifications	Number of control axes	**EMP401**: Single axis · **EMP402**: Dual axis			
	Pulse output mode	1- or 2-pulse output mode			
	Frequency	10 to 200 kHz (1-Hz increment) Pulse duty 50% (Fixed)			
	Acceleration/deceleration rate	0.5 to 1,000 ms/kHz (0.1 - ms/kHz increments)			
	Acceleration/deceleration pattern	Linear/jerk-limit control			
	Travel amount	Incremental: −16,777,215∼+16,777,215 pulse Absolute: −8,388,608∼+8,388,607 pulse			
Operation Pattern		Incremental Operation	Absolute Operation	Mechanical Home Seeking	Continuous Operation
	Linear acceleration/deceleration	✔	✔	✔	✔
	Jerk-limit control	✔	✔	✔	✔
	Dual axis linear interpolation operation	✔	✔	✕	✕
	Speed change on the fly	✕	✕	✕	✔
Communication Specifications	Communication method	RS-232C based (3-wire)			
	Parameters	Baud rate fixed at 9,600, 8 data bits, 1 stop bit, no parity			
Input/Output Signal Specifications	Inputs (START, E-STOP, S-STOP)	3 photocoupler inputs 24 VDC, Input resistance 5.4 kΩ			
	Outputs (MOVE, ALM, READY, END)	4 open-collector outputs 24 VDC, 25 mA Max. each			
	General-purpose inputs	8 photocoupler inputs 24 VDC, Input resistance 5.4 kΩ			
	General-purpose outputs	6 open-collector outputs 24 VDC, 25 mA Max. each			
	Driver and sensor inputs	7 (**EMP401**) / 14 (**EMP402**) photocoupler inputs 12 VDC, input resistance 2.7 kΩ			
	Driver outputs	3 (**EMP401**) / 6 (**EMP402**) open-collector outputs 12 VDC, 20 mA Max. each			
General Specifications	Power requirement	24 VDC ±5%, Current Consumption 0.45 A			
	Dimensions	W 1.57 in. (40 mm) × H 5.31 in. (135 mm) × D 3.94 in. (100 mm)			
	Weight	0.57 lb. (0.26 kg)			
	Ambient temperature	32°F∼122°F (0°C∼+50°C) (nonfreezing)			
	Ambient humidity	20% ∼ 85% (noncondensing)			

✔ : Available   ✕ : Not Available

■ Dimensions   Scale 1/4, Unit = **inch** (mm)

Weight: 0.57 lb. (0.26 kg)

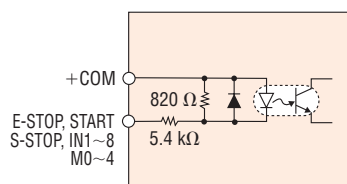**DXF** B295
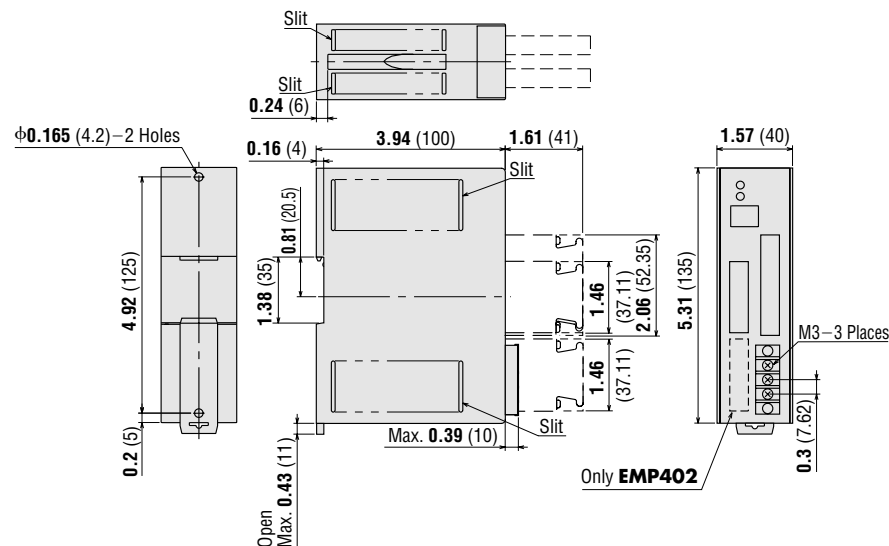
■ Connection and Operation

Connector Layout

1 —
PC or **OP300** Connection Port (CN2)

3 —

2

4 —
✽**EMP402** Only

Power Supply Terminal (TB1)
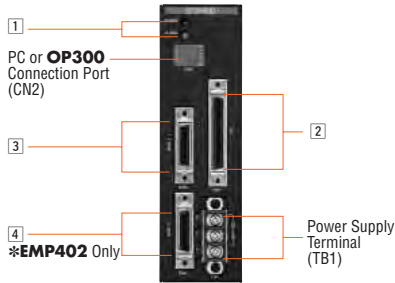
1 LED Monitor Display

Indication	Condition when LED ON
POWER	Lights during 24 VDC input.
ALARM	Lights during alarm signal output.

2 CN1 I/O Signal Connector

Pin No.	Signal	Description	Pin No.	Signal	Description
1	—	Not used	26	—	Not used
2	E-STOP Input	Emergency Stop	27	ALM Output	Alarm
3	START Input	Execute Sequence Program	28	—	Not used
4	S-STOP Input	Cease Sequence Execution	29	MOVE Output	Outputting Pulses
5	—	Not used	30	—	Not used
6	—	Not used	31	READY Output	Ready to accept START input
7	+COM Input	I/O Power Supply (+24 VDC)	32	+COM Input	I/O Power Supply (+24V)
8	IN1 Input	General Inputs	33	MO Input	Sequence Number Selection
9	IN2 Input		34	M1 Input	
10	IN3 Input		35	M2 Input	
11	IN4 Input		36	M3 Input	
12	IN5 Input		37	M4 Input	
13	IN6 Input		38	—	Not used
14	IN7 Input		39	—	Not used
15	IN8 Input		40	—	Not used
16	+COM Input	I/O Power Supply (+24 VDC)	41	—	Not used
17	OUT1 Output	General Outputs	42	—	Not used
18	OUT2 Output		43	—	Not used
19	OUT3 Output		44	—	Not used
20	OUT4 Output		45	—	Not used
21	OUT5 Output		46	—	Not used
22	OUT6 Output		47	—	Not used
23	—	Not used	48	—	Not used
24	—	Not used	49	END Output	End Signal
25	−COM Input	GND for I/O	50	−COM Input	GND for I/O

Internal Input Circuit

+COM

E-STOP, START
S-STOP, IN1~8
M0~4

820 Ω

5.4 kΩ

Internal Output Circuit

+COM

ALM, MOVE
READY, OUT1~6, END

25 mA Max.

−COM

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Low-Speed Synchronous Motors

Accessories

Before Using a Stepping Motor

3 **CN3 Axis-1 Driver Connector**
4 **CN4 Axis-2 Driver Connector**

Pin No.	Signal	Description	Pin No.	Signal	Description
1	+CW-P output (+PULSE output) *	CW pulse (pulse) *	14	—	Not used
2	−CW-P output (−PULSE output) *		15	—	Not used
3	+CCW-P output (+DIR output) *	CCW pulse (Direction of rotation) *	16	+CCR output	Counter-clear
4	−CCW-P output (−DIR output) *		17	−CCR output	
5	END input	END signal from driver	18	GND	GND signal from driver
6	TIM input	Timing signal from driver	19	—	Not used
7	ALM input	Alarm signal from driver	20	—	Not used
8	+LS input	CW limit sensor	21	—	Not used
9	−LS input	CCW limit sensor	22	—	Not used
10	HOMELS input	Home limit sensor	23	—	Not used
11	SLIT input	Slit sensor	24	—	Not used
12	+12 V output	Power source for sensor (140 mA max.)	25	+5 V output	Power source for timing signal (20 mA max.)
13	GND	GND for sensor	26	GND	GND for timing signal

∗ The values in parentheses are for 1-pulse output mode. The other values are for 2-pulse output mode.
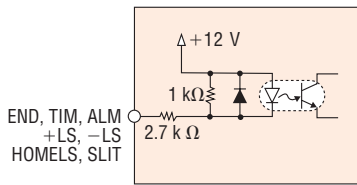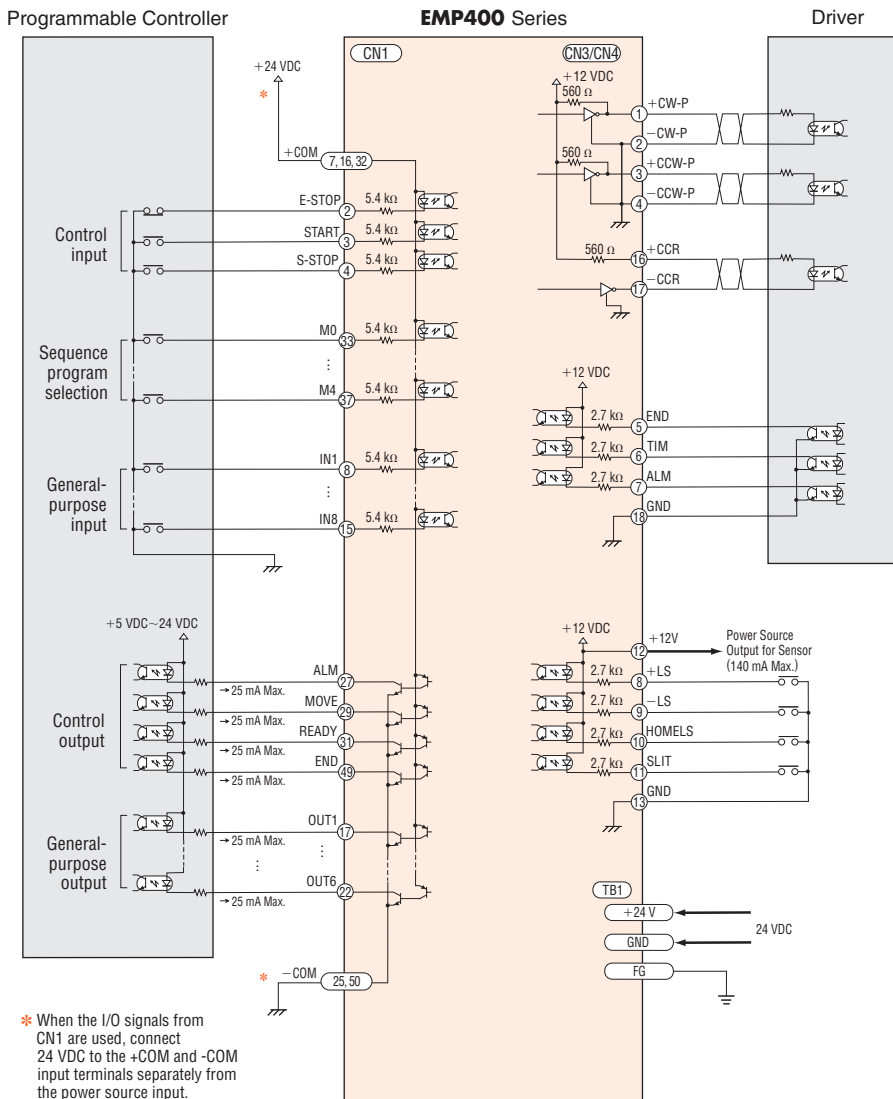
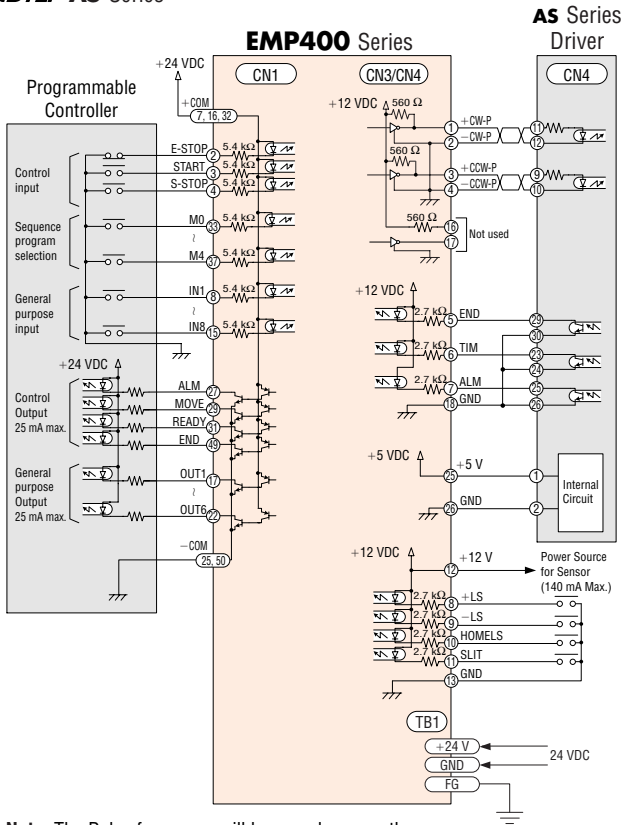**Internal Input Circuit**   **Internal Output Circuit**
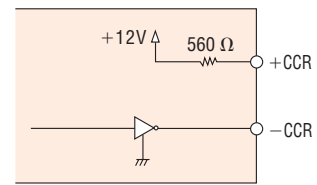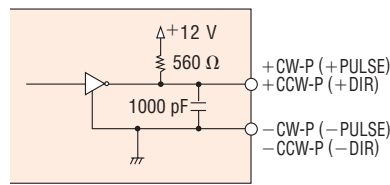
● **Connection Diagrams**

∗ When the I/O signals from
CN1 are used, connect
24 VDC to the +COM and -COM
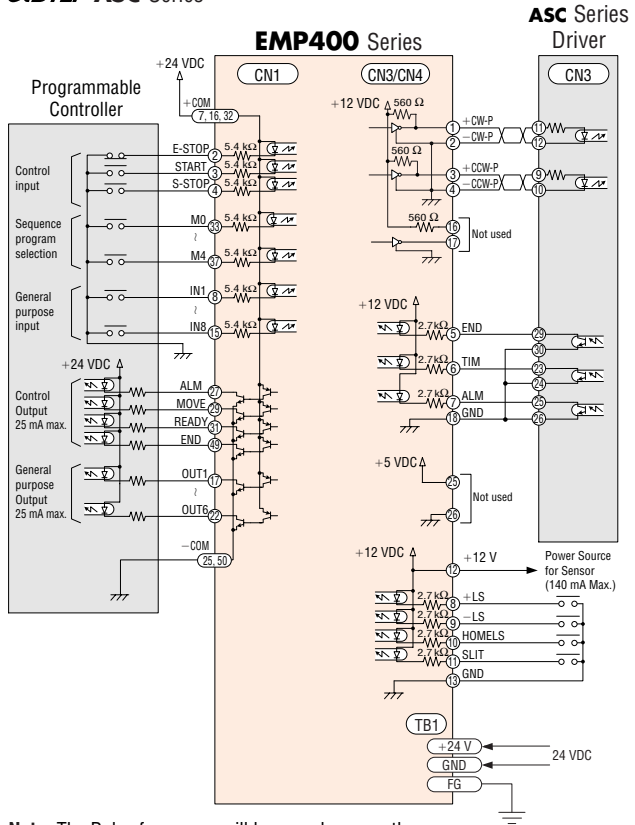input terminals separately from
the power source input.
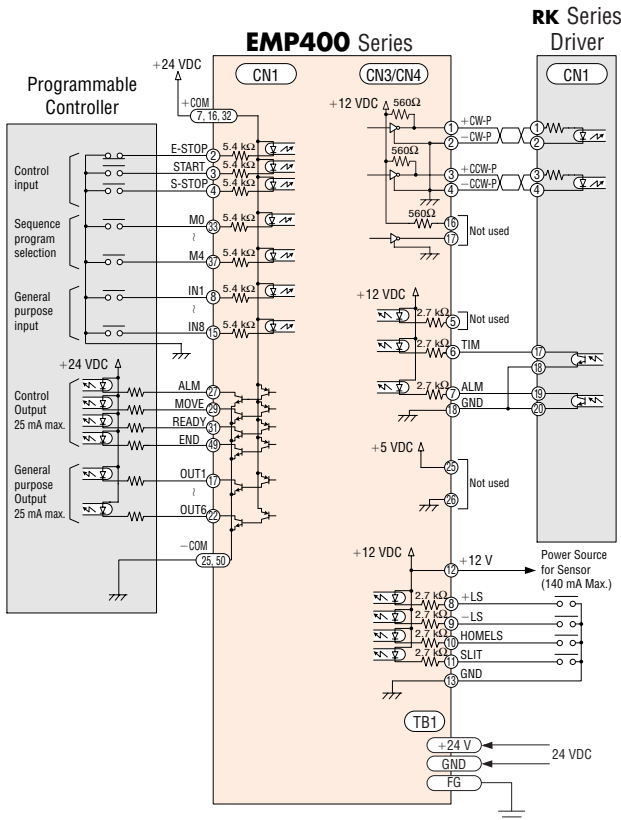
● Connection Diagrams

αSTEP AS Series

EMP400 Series

AS Series Driver

Programmable Controller

+24 VDC
+COM (7, 16, 32)

Control input
- E-STOP 5.4 kΩ
- START
- S-STOP

Sequence program selection
- M0
- M4

General purpose input
- IN1
- IN8

+24 VDC

Control Output 25 mA max.
- ALM
- MOVE
- READY
- END

General purpose Output 25 mA max.
- OUT1
- OUT6

−COM (25, 50)

CN1 | CN3/CN4 | CN4

+12 VDC 560 Ω
+CW-P / −CW-P
560 Ω
+CCW-P / −CCW-P
560 Ω Not used

+12 VDC
2.7 kΩ END
2.7 kΩ TIM
2.7 kΩ ALM
GND

+5 VDC
+5 V
GND
Internal Circuit

+12 VDC
+12 V Power Source for Sensor (140 mA Max.)
2.7 kΩ +LS
2.7 kΩ −LS
2.7 kΩ HOMELS
2.7 kΩ SLIT
GND

TB1
+24 V
GND   24 VDC
FG

Note: The Pulse frequency will become lower as the signal lines becomes longer.

αSTEP ASC Series

EMP400 Series

ASC Series Driver

Programmable Controller

+24 VDC
+COM (7, 16, 32)

Control input
- E-STOP 5.4 kΩ
- START
- S-STOP

Sequence program selection
- M0
- M4

General purpose input
- IN1
- IN8

+24 VDC

Control Output 25 mA max.
- ALM
- MOVE
- READY
- END

General purpose Output 25 mA max.
- OUT1
- OUT6

−COM (25, 50)

CN1 | CN3/CN4 | CN3

+12 VDC 560 Ω
+CW-P / −CW-P
560 Ω
+CCW-P / −CCW-P
560 Ω Not used

+12 VDC
2.7 kΩ END
2.7 kΩ TIM
2.7 kΩ ALM
GND

+5 VDC
Not used

+12 VDC
+12 V Power Source for Sensor (140 mA Max.)
2.7 kΩ +LS
2.7 kΩ −LS
2.7 kΩ HOMELS
2.7 kΩ SLIT
GND

TB1
+24 V
GND   24 VDC
FG

Note: The Pulse frequency will become lower as the signal lines becomes longer.

RK Series

EMP400 Series

RK Series Driver

Programmable Controller

+24 VDC
+COM (7, 16, 32)

Control input
- E-STOP 5.4 kΩ
- START
- S-STOP

Sequence program selection
- M0
- M4

General purpose input
- IN1
- IN8

+24 VDC

Control Output 25 mA max.
- ALM
- MOVE
- READY
- END

General purpose Output 25 mA max.
- OUT1
- OUT6

−COM (25, 50)

CN1 | CN3/CN4 | CN1

+12 VDC 560Ω
+CW-P / −CW-P
560Ω
+CCW-P / −CCW-P
560Ω Not used

+12 VDC
2.7 kΩ Not used
2.7 kΩ TIM
2.7 kΩ ALM
GND

+5 VDC
Not used

+12 VDC
+12 V Power Source for Sensor (140 mA Max.)
2.7 kΩ +LS
2.7 kΩ −LS
2.7 kΩ HOMELS
2.7 kΩ SLIT
GND

TB1
+24 V
GND   24 VDC
FG

Note: The Pulse frequency will become lower as the signal lines becomes longer.

Nano Step CFKⅡ Series

EMP400 Series

CFKⅡ Series Driver

Programmable Controller

+24 VDC
+COM (7, 16, 32)

Control input
- E-STOP 5.4 kΩ
- START
- S-STOP

Sequence program selection
- M0
- M4

General purpose input
- IN1
- IN8

+24 VDC

Control Output 25 mA max.
- ALM
- MOVE
- READY
- END

General purpose Output 25 mA max.
- OUT1
- OUT6

−COM (25, 50)

CN1 | CN3/CN4 | CN3

+12 VDC 560 Ω
+CW-P / −CW-P
560 Ω
+CCW-P / −CCW-P
560 Ω Not used

+12 VDC
2.7 kΩ Not used
2.7 kΩ TIM
2.7 kΩ Not used
GND

+5 VDC
Not used

+12 VDC
+12 V Power Source for Sensor (140 mA Max.)
2.7 kΩ +LS
2.7 kΩ −LS
2.7 kΩ HOMELS
2.7 kΩ SLIT
GND

TB1
+24 V
GND   24 VDC
FG

Note: The Pulse frequency will become lower as the signal lines becomes longer.

NaN

■ Accessories (sold separately)
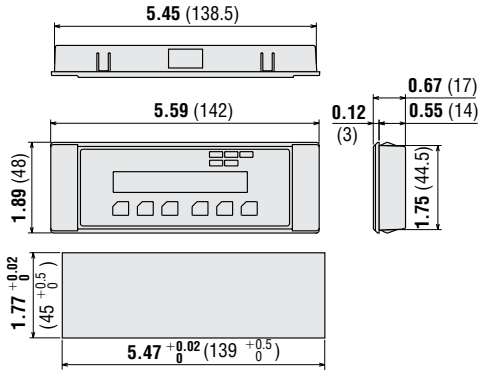
● Operator Interface Unit

Model: **OP300**

Set the travel amount via teaching or monitor the current position.
The unit comes with a cable 6.6 ft. (2 m) for connection with the **EMP400** Series.

✻ A personal computer cannot be connected while the **OP300** is connected.

◆ Dimensions Scale 1/4, Unit = **inch** (mm)

DXF B297

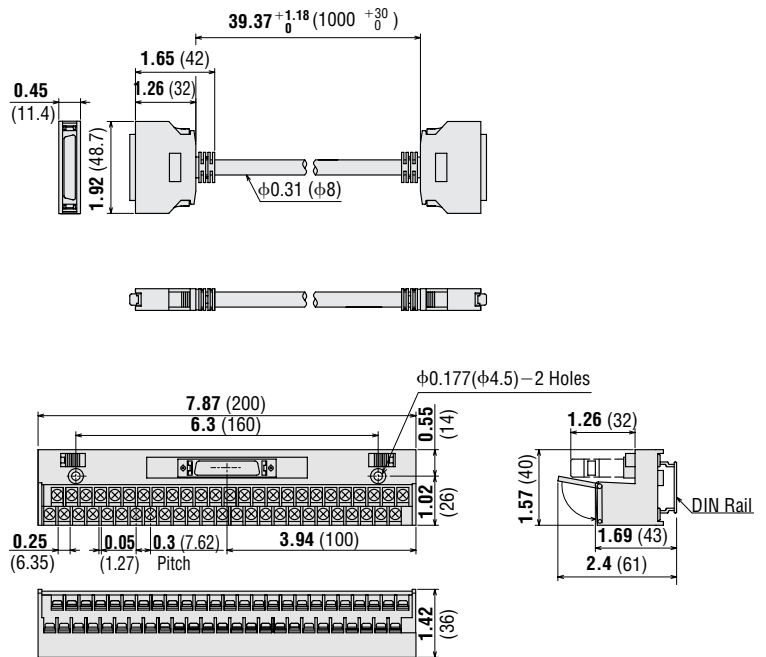Panel Cut-out Dimensions

● I/O Cable with Terminal Block

Model: **CC01EMP1T**

The **EMP400** Series, programmable controller, and I/O signals can all be connected via a terminal block.
Cable length: 3.3 ft. (1 m)

◆ Dimensions Scale 1/4, Unit = **inch** (mm)

DXF B300

Terminal block pin configuration

26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25

● Communication Cable

Model: **FC04W5**

Input programs from a PC

Use this 16.4 ft. (5 m) communication cable to connect the **EMP400** Series to a PC.
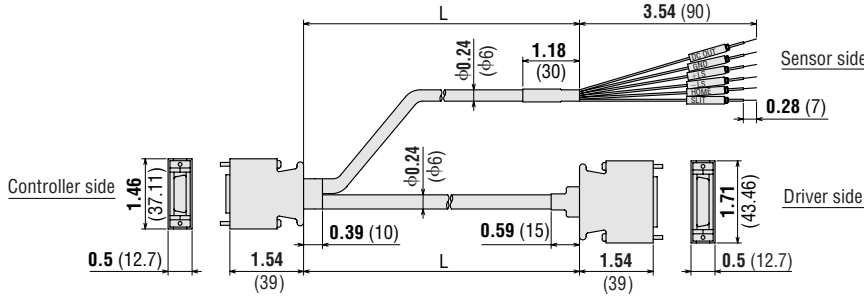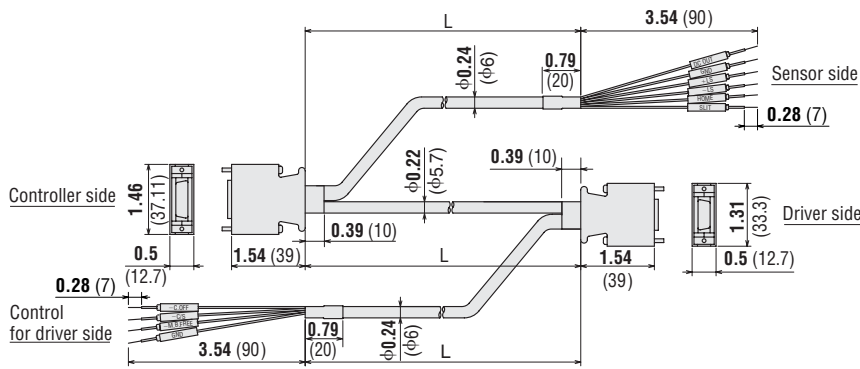(DSUB9F to RJ 11 cable)

● Driver Cables

Model	Length (L)	Applicable Product	Connector Number
CC01EMP4	3.3 ft. (1 m)	**AS**, **ASC** Series	CN3 & CN4
CC02EMP4	6.6 ft. (2 m)	**AS**, **ASC** Series	
CC01EMP5	3.3 ft. (1 m)	**RK** Series	
CC02EMP5	6.6 ft. (2 m)	**RK** Series	

◆ Dimensions Scale 1/4, Unit = **inch** (mm)

● CC☐☐EMP4

● CC☐☐EMP5

Stepping Motors

Introduction

AS

AS PLUS

ASC

RK

CFK II

CSK

PMC

UMK

CSK

PK/PV

PK

UI2120G

EMP401 EMP402

SG8030J

SMK

Accessories

Closed Loop αSTEP
AC Input
DC Input

Motor & Driver Packages
5-Phase Microstep
AC Input
DC Input

5-Phase Full/Half
DC Input

2-Phase Full/Half
AC Input
DC Input

2-Phase Stepping Motors
without Encoder
with Encoder

Driver
with Indexer

Controllers

Low-Speed
Synchronous
Motors

Before Using
a Stepping
Motor