

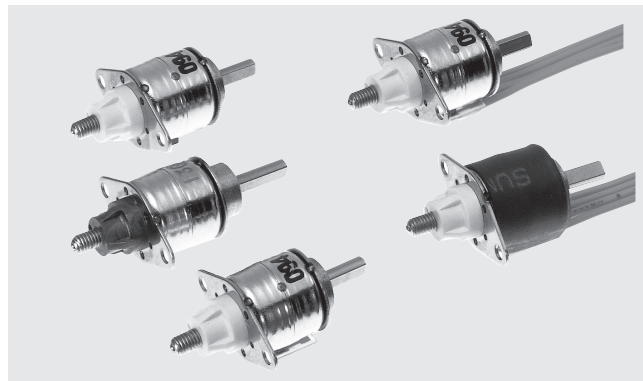
# 小型φ10、微小な位置決め (20 μm/1step) が可能

## リニアステッピングアクチュエータ STEPPING MOTORS

# SPS10

SPS10 はステッピングモータの前部軸受けをネジ構造とすることにより回転力を直接推進力に変換するアクチュエータです。シャフトは回転しながら繰り出しますので、シャフト先端に埋め込まれた鋼球が対象物を押す仕組みとなっております。モータ本体は普通のPM型ステッピングモータですので一般のステッピングモータドライバで駆動できます。

The SPS10 series uses a screw construction in the front shaft, creating an actuator for converting rotational force into linear force. The shaft extends as it rotates, and there is steel ball on the end for pushing the object. The motor is a normal PM stepping motor and can be driven with a standard stepping motor driver. The characteristics assume intermittent driving.



### ■特長 FEATURES

- 精密位置制御が可能 (20 μm/step、±7 μm: 初期値)
- SPS シリーズ最小
- 電源 OFF で位置保持が可能
- ソフトランニング、比例制御が容易
- マイクロステップドライブと好相性
- RoHS 指令対応
- Precision position control is possible (20μm/step, ±7μm: initial value)
- Most compact size of the SPS series
- Position can be held with power off
- Soft running is possible, proportional control is easy
- Good matching with micro stepping drive
- RoHS compliant

### ■用途 APPLICATIONS

- 各種精密位置制御
- 小型バルブ駆動
- ゲーム機
- Other precisely position sensing
- Small bulbs
- Game machines

### ■型式表示 PART NUMBER DESIGNATION

SPS10-21822-1002

シリーズ名 Series name

相数 Number of phases

2 : 2 phases

ステップ角度 Step angle (at 2 phases-EX.)

18°

コイル抵抗 Winding resistance

22 : 22 Ω

型式コード (製品名に対応)

Code for a model (In reference to a name of product)

1002 : ピン端子 Pin terminals

1101 : 基板付 With PCB

1200 : 基板+リード線付  
With PCB and lead wire

1300 : 基板+リード線+熱収縮チューブ付  
With PCB, lead wire and heat shrink tube

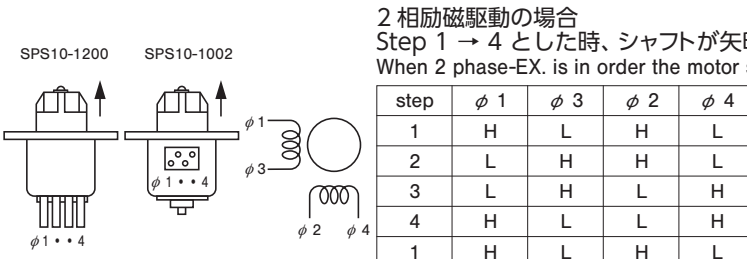
1003 : ストローク 10 mm 10 mm stroke

ロット生産ですので、ご注文に際しては、弊社にご相談ください。  
Lot production is required. Please consult us for ordering.

# SPS10

## STEPPING MOTORS

### ■標準仕様 STANDARD SPECIFICATIONS

| 項目<br>Item                               | SPS10 シリーズ<br>SPS10 series   | 備考<br>Remarks                   |     |     |     |     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|--|--|---------------------------------|-----|-----|-----|-----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|
| 相数/励磁方式<br>Number of phases / Excitation | 2 / 2相バイポーラ<br>2 phases bipolar  | -                               |     |     |     |     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 1回転ステップ数<br>Steps                        | 20   | 2 phases-EX.                    |     |     |     |     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| スクリューピッチ<br>Screw pitch                  | 0.4 mm   | -                               |     |     |     |     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| ステップサイズ<br>Step size                     | 20 μm  | 2 phases-EX.                    |     |     |     |     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| コイル抵抗<br>Winding resistance              | 22 Ω   | -                               |     |     |     |     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 許容スラスト荷重<br>Allowable thrust             | 4.9 N  | -                               |     |     |     |     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 推力<br>Thrust                             | 0.98 N   | 参考値<br>Reference value          |     |     |     |     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 電圧<br>Voltage                            | 特性図参照<br>Refer to PERFORMANCE CURVES   | 初期実力値<br>Initial strength value |     |     |     |     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 電流<br>Current                            |  |                                 |     |     |     |     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 引入推力<br>Pull-in thrust                   |  |                                 |     |     |     |     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 脱出推力<br>Pull-out thrust                  |  |                                 |     |     |     |     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 温度上昇<br>Temperature increase             | 温度特性図参照<br>Refer to TEMPERATURE CHARACTERISTICS  | -                               |     |     |     |     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 絶縁抵抗<br>Insulation resistance            | 30 MΩ minimum  | DC500 V                         |     |     |     |     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 絶縁耐力<br>Dielectric strength              | 500 Vrms   | AC, 1 min                       |     |     |     |     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 機械的ストローク<br>Effective mechanical stroke  | 8 mm (コード-1003は11 mm<br>Code-1003 is 11 mm)  | -                               |     |     |     |     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 有効ストローク<br>Effective stroke              | 7 mm (コード-1003は10 mm<br>Code-1003 is 10 mm)  |                                 |     |     |     |     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 使用温度範囲<br>Operating temperature range    | 0 ~ 50 °C  |                                 |     |     |     |     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 保存温度範囲<br>Storage temperature range      | -10 ~ 60 °C  |                                 |     |     |     |     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 寿命<br>Life                               | 0.98 Nにて100万サイクル以上<br>1 million cycles minimum at a load 0.98 N  | 参考値<br>Reference value ※1       |     |     |     |     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 質量<br>Net weight                         | Approx. 6 g maximum  | -                               |     |     |     |     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 結線図<br>Wiring diagram                    |  <p>2相励磁駆動の場合<br/>Step 1 → 4とした時、シャフトが矢印方向に進む<br/>When 2 phase-EX. is in order the motor shaft moves ahead.</p> <table border="1"> <thead> <tr> <th>step</th> <th>φ 1</th> <th>φ 3</th> <th>φ 2</th> <th>φ 4</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>H</td> <td>L</td> <td>H</td> <td>L</td> </tr> <tr> <td>2</td> <td>L</td> <td>H</td> <td>H</td> <td>L</td> </tr> <tr> <td>3</td> <td>L</td> <td>H</td> <td>L</td> <td>H</td> </tr> <tr> <td>4</td> <td>H</td> <td>L</td> <td>L</td> <td>H</td> </tr> <tr> <td>1</td> <td>H</td> <td>L</td> <td>H</td> <td>L</td> </tr> </tbody> </table> | step                            | φ 1 | φ 3 | φ 2 | φ 4 | 1 | H | L | H | L | 2 | L | H | H | L | 3 | L | H | L | H | 4 | H | L | L | H | 1 | H | L | H | L | ※マイクロステップで駆動される場合は弊社までお問い合わせください。<br>Please contact us for driving the micro step. |
| step                                     | φ 1  | φ 3                             | φ 2 | φ 4 |     |     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 1  | H  | L                               | H   | L   |     |     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 2  | L  | H                               | H   | L   |     |     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 3  | L  | H                               | L   | H   |     |     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 4  | H  | L                               | L   | H   |     |     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 1  | H  | L                               | H   | L   |     |     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |

※ 1 : 寿命は使用条件により大幅に変わります。別途お問い合わせください。  
Life depends on greatly how to use it. For more information, please contact us.

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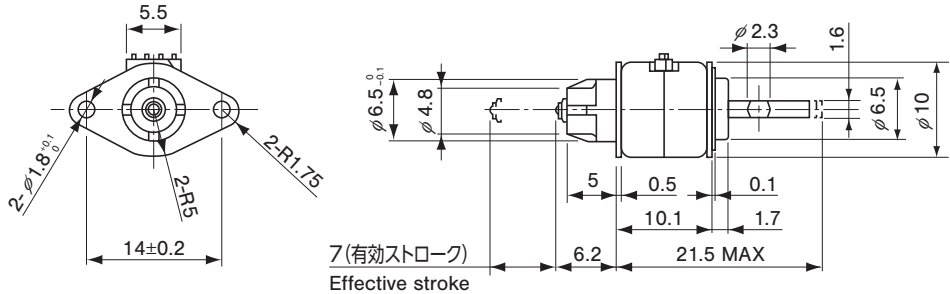
# SPS10

## STEPPING MOTORS

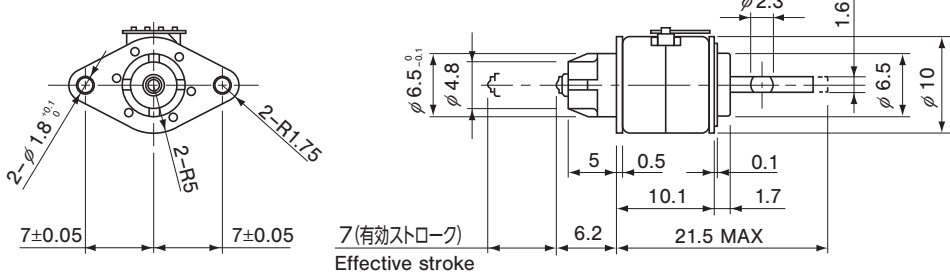
### 外形寸法図 OUTLINE DIMENSIONS

Unless otherwise specified tolerance:  $\pm 0.5$  (Unit: mm)

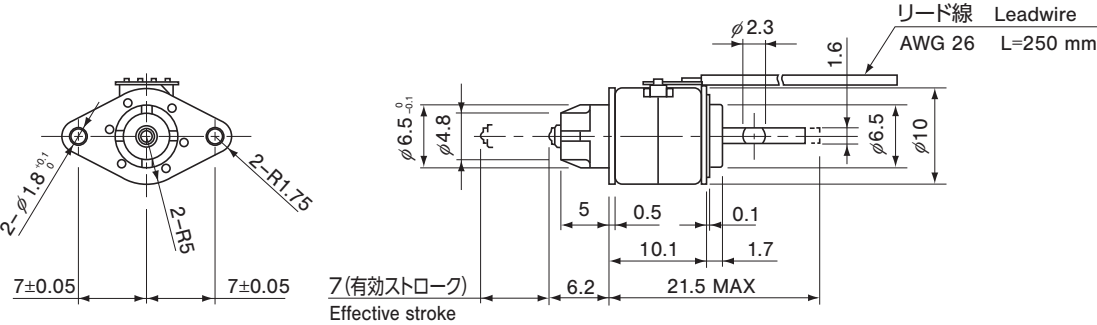
● SPS10-1002



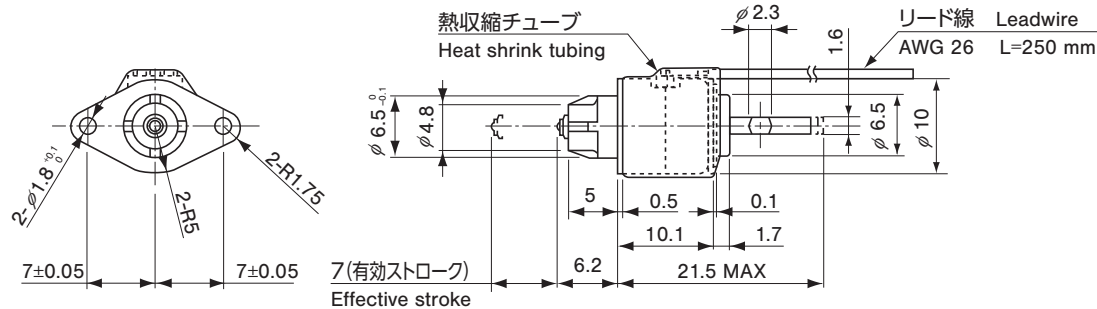
● SPS10-1101



● SPS10-1200



● SPS10-1300



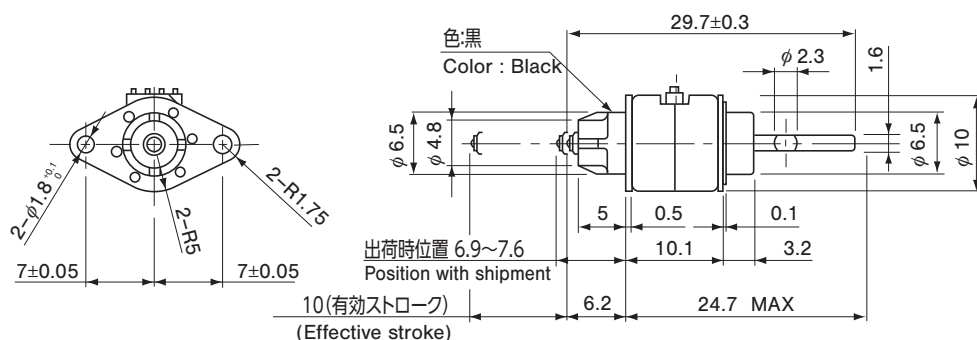
# SPS10

## STEPPING MOTORS

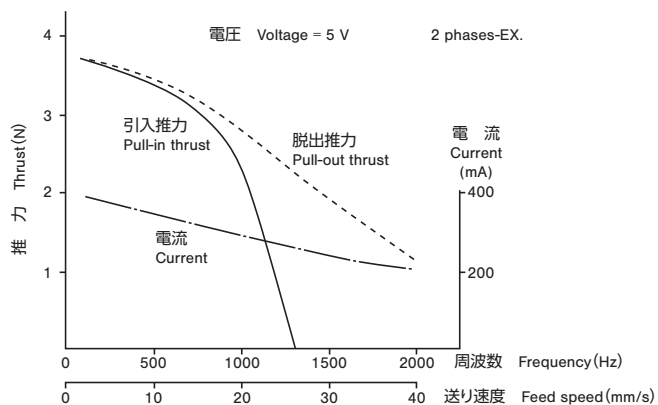
### ■外形寸法図 OUTLINE DIMENSIONS

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#### ● SPS10-1003

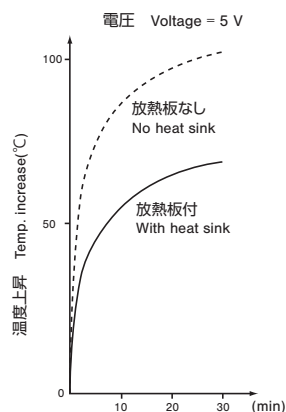


### ■特性図 (参考値) PERFORMANCE CURVES (Reference values)



### ■温度特性 TEMPERATURE CHARACTERISTICS

(at 500 Hz 2 phases-EX., Heat sink : 50 mm × 100 mm × 1 mm Aluminium plate)



※特性は実測値です。保証値ではありません。  
These performance curves show actual value, not guaranteed value.