

# SANMOTION F5

5-PHASE STEPPING SYSTEMS



## 5-Phase Stepping Driver

DC input

### Applications

Medical equipment, semiconductor manufacturing equipment, measuring instruments, analyzers, and electron microscopes

### Features

#### High Torque

The high-power model achieves approximately 1.5 times higher or more torque at high speeds than our current model,<sup>(1)</sup> reducing the cycle time of your equipment and increasing productivity.

#### Low Vibration

Motor vibration during operation has been reduced to one-third or less compared to the current model.<sup>(1)</sup> These drivers help make equipment motion smoother, improving the processing precision and reducing the noise.

#### Various Useful Safety Functions

- Using PC software, the high-power model offers fine settings of input/output signals, maintenance timing notifications, and current value selection optimized for customer equipment.
- Overcurrents and wire breakage caused by pinched motor power cables can be detected and notified with an alarm and motors can be stopped safely. Abnormal power supply voltage and heat generation can be notified even before the alarm goes off, ensuring the safety of your system.

#### Easy Replacement

The basic models have mounting and interface compatibility with the current model<sup>(2)</sup> for easy replacement. Equipment performance can be improved by simply replacing your current stepping driver with a new model, with your current motor unchanged.

#### Compact and Lightweight

The high-power model is newly designed to achieve a 63% reduction in volume and 73% reduction in mass compared to our current model.<sup>(3)</sup>

The basic model achieves a 7% reduction in volume and 39% reduction in mass while maintaining compatibility with the current model.<sup>(2)</sup>

(1) Current model: 5-phase stepping driver (model: F5PAE140P100) combined with 60 mm sq. stepping motor (model: S□5601-□2□□)

(2) Current model: 5-phase stepping driver (model: FS1D140P10)

(3) Current model: 5-phase stepping driver (model: F5PAE140P100)

### Specifications

| Model                 | SANMOTION F5 high-power model                                    | SANMOTION F5 basic model  |  |
|-----------------------|--|---|--|
| Model no.             | F5PFD280P100   | F5PED140P100  |  |
| Features              | High torque, high performance                                    | Compatible with our current models  |  |
| Basic specifications  | Input voltage  | 24 VDC ± 10%  |  |
|                       | Input current  | 4 A   | 2 A  |
|                       | Environment  | Protection class  | Class III  |
|                       |  | Operating environment   | Installation category (Overvoltage category): I (CE), pollution level: 2                   |
|                       |  | Operating ambient temperature   | 0 to +50°C   |
|                       |  | Storage temperature   | -20 to +70°C   |
|                       |  | Operating ambient humidity  | Below 90% RH (non-condensing)  |
|                       |  | Storage humidity  | Below 90% RH (non-condensing)  |
|                       |  | Operating altitude  | 1000 m or lower above sea level  |
|                       |  | Vibration resistance  | 5 m/s <sup>2</sup> , at frequency of 10 to 55 Hz in each X, Y, and Z direction for 2 hours |
|                       |  | Shock resistance  | 20 m/s <sup>2</sup>  |
| Dielectric strength   | 700 VDC for 1 minute (between power input terminal and chassis)  |   |  |
| Insulation resistance | 10 MΩ min. at 500 VDC (between power input terminal and chassis) |   |  |
| Mass                  | 60 g   | 55 g  |  |
| Functions             | Function selections  | Pulse input mode (1-/2-input mode), low vibration mode (on/off), automatic current limiting (on/off), step division mode (2-/5-phase mode), initial excitation phase (excitation origin/excitation phase of last power off), motor selection, operating current, step angle |  |
|                       | Protection functions   | Overcurrent protection, power supply voltage monitoring, overheat detection, motor wire breakage detection, command speed error, memory error, hardware error   |  |
|                       | LED indicators   | Power supply monitoring, alarm status monitoring  |  |
|                       | PC-based functions   | Parameter customization, operating status monitoring  | -  |

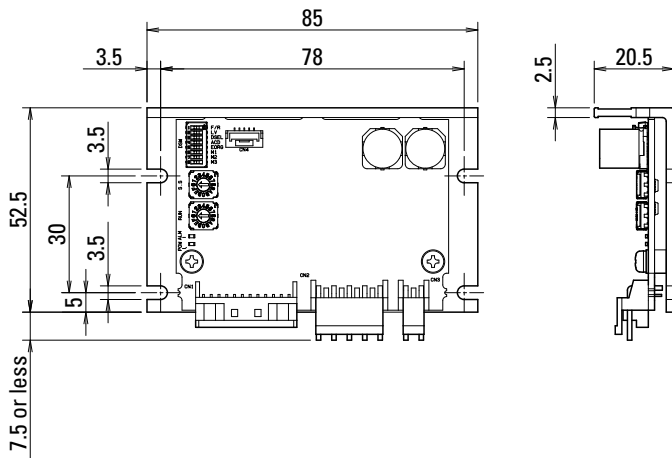
## Compatible motors

Driver and motor combination table

| Driver model                     | Motor size | Single shaft | Dual shaft  | Rated current |
|----------------------------------|------------|--------------|-------------|---------------|
| SANMOTION F5<br>high-power model | 60 mm sq.  | SF5601-9251  | SF5601-9221 | 2.8 A/phase   |
|                                  |            | SF5602-9251  | SF5602-9221 |               |
|                                  |            | SF5603-9251  | SF5603-9221 |               |
| SANMOTION F5<br>basic model      | 28 mm sq.  | SH5281-7241  | SH5281-7211 | 0.75 A/phase  |
|                                  |            | SH5285-7241  | SH5285-7211 |               |
|                                  | 42 mm sq.  | SF5421-8241  | SF5421-8211 | 1.4 A/phase   |
|                                  |            | SF5422-8241  | SF5422-8211 |               |
|                                  |            | SF5423-8241  | SF5423-8211 |               |
|                                  | 60 mm sq.  | SM5601-8241  | SM5601-8211 |               |
|                                  |            | SM5602-8241  | SM5602-8211 |               |
|                                  |            | SM5603-8241  | SM5603-8211 |               |
|                                  | 86 mm sq.  | SM5861-8241  | SM5861-8211 |               |
|                                  |            | SM5862-8241  | SM5862-8211 |               |

## Dimensions [Unit: mm]

SANMOTION F5 high-power model Model no.: F5PFD280P100



SANMOTION F5 basic model Model no.: F5PED140P100

