

7. Compatible with international standards

EC directives

EC directives cover all general consumer electronics having specific functions and to be directly delivered to European Union (EU).

These electronic products must meet safety standards commonly applicable to all EU member nations, and must bear CE marking.

Our speed controllers are compatible with standards referenced by Low Voltage Directive so that the machines and devices incorporating these controllers will meet requirements of EC directives.

Conformance to EMC directives

Our speed controllers have been verified to conform to standards associated with EMC directives by testing them using application models (conditions) representing typical installations and wiring with which these controllers will be used. Of course, it is impossible to simulate all actual operating conditions (e.g. wiring and grounding). Therefore, any equipment incorporating our speed controller should be checked on the items required by EMC directives (especially, unwanted radiation, noise, terminal voltage, etc.).

UL/CE Certification

	Standard	Installation condition	File No.
UL	UL508 Standard for industrial control devices such as motor control		E228869
	EN50178 Electronic/electrical devices used in electric power facilities (Low Voltage Directive)	Overvoltage Category II Class II device Pollution degree 2	-
EN55011 Radio interference wave characteristics of high-frequency devices for industrial, scientific and medical application			
EN61000-6-2 Immunity standard for industrial environment (EMC directive)			
IEC61000-4-2 Electrostatic discharge immunity test			
CE	IEC61000-4-3 Radio frequency radiation field immunity test		
	IEC61000-4-4 Electrical high speed transient burst immunity test		
	IEC61000-4-5 Lightning surge immunity test		
	IEC61000-4-6 High-frequency conductivity immunity test		
	IEC61000-4-11 Instantaneous power interruption immunity test		

7. Compatible with international standards

Peripherals layout practices

Power source	<ul style="list-style-type: none"> 100 V system: 1-p 100-120 V $\pm 10\%$, 50/60 Hz 200 V system: 1-p 200-240 V $\pm 10\%$, 50/60 Hz Use it in environment of overvoltage category II specified in IEC 60664-1. When using in overvoltage category III environment, connect an insulating transformer conforming to EN standard or IEC standard to the input of the speed controller. Electric wire size should be compatible with EN 60204-1.
Circuit breaker or fuse	Connect a specified UL and IEC standard approved circuit breaker or UL approved fuse between the power source and the noise filter. This configuration meets requirements of UL508 (file No.E228869).
Noise filter	When using two or more speed controllers together with one noise filter, consult the noise filter manufacturer.
Surge absorber	Connect a surge absorber to the primary side of the noise filter. Disconnect the surge absorber before conducting withstand voltage test of machine/device to protect the surge absorber.
Ground	Connect the protective earth (PE) to the motor and noise filter connected to the speed controller.

Speed controller and peripherals

Product	Option part No.	Manufacturer part No.	Manufacturer
Noise filter	—	MR-2043	NEC Tokin Corp.
Surge absorber	DV0P4190	R.A.V-781BWZ-4	Okaya Electric Industries Co., Ltd.

Recommended circuit breakers

Sanken Airpax Co., Ltd.

Type single-phase: IELH-1-11-63-5A-M

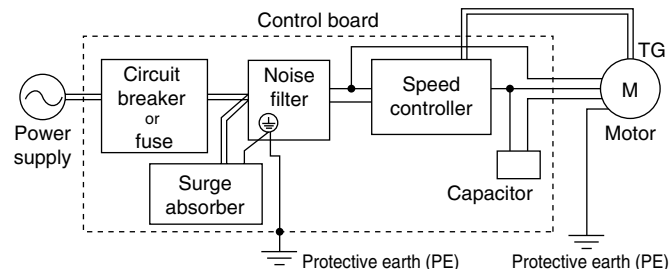
Rated current 5 A, current breaking characteristic DELAY63

Recommended current breaking characteristic: DELAY61-63

Installation environment

Use the speed controller in pollution degree 2 or 1 as specified in IEC60664-1.

(Example: Installed the controller in IP54 control board)



* The length of connection cable between the speed controller and motor should be shorter than 3 m.

Manufacturer of peripherals

As of September 2006

Manufacturer	TEL
Okaya Electric Industries Co., Ltd.	East Japan : 03-3424-8120
	West Japan : 06-6392-1781
NEC Tokin Corporation	East Japan : 03-3515-9151
	West Japan : 06-6263-6781
Matsushita Electric Works, Ltd.	06-6908-1131
Sanken Airpax Co., Ltd.	East Japan : 0492-83-7575
	West Japan : 06-6312-8716
Sato Parts Co., Ltd.	06-6643-2561