MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

YASKAWA

SGDV-5R4D11A020000

MECHATROLINK-II AC SERVO DRIVE

Used with the applicable Sigma-5 SERVOPACK configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: YASKAWA Sigma-5 SERVOPACK manufacturer technical data

YASKAWA

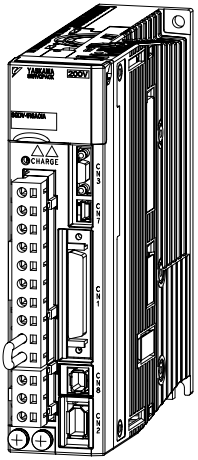
AC Servodrive

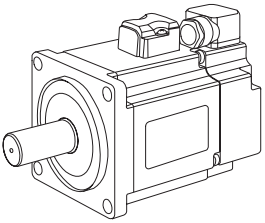
Σ-V Series

USER'S MANUAL Setup

Rotational Motor

SGMJV/SGMAV/SGMGV/SGMCS Servomotors
SGDV SERVOPACK





MANUAL NO. SIEP S800000 43A

■ Three-phase 200 V

Cable	Connection Terminal Symbol	SERVOPACK Model SGDV-					
		R70A	R90A	1R6A	2R8A	3R8A	5R5A
Main circuit cable	L1, L2, L3	HIV1.25			HIV2.0		
Motor main circuit cable	U, V, W	HIV1.25				HIV2.0	
Control power cable	L1C, L2C	HIV1.25					
External regenerative resistor cable	B1, B2	HIV1.25					
Ground cable	⏚	HIV2.0 or more					

■ Three-phase 400 V

Cable	Connection Terminal Symbol	SERVOPACK Model SGDV-					
		1R9D	3R5D	5R4D	8R4D	120D	170D
Main circuit cable	L1, L2, L3	HIV1.25			HIV2.0		HIV3.5
Motor main circuit cable	U, V, W	HIV1.25			HIV2.0		HIV3.5
Control power cable	24 V, 0 V	HIV1.25					
External regenerative resistor cable	B1, B2	HIV1.25					HIV2.0
Ground cable	⏚	HIV2.0 or more					

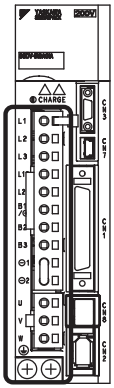
- When either of the following special power supply environments or SERVOPACK configurations are to be used, refer to the manuals (listed below) for the appropriate wiring, connections, and required settings.
  - Using a SERVOPACK with DC power supply inputs
  - Using a SERVOPACK with a 400 V class power supply voltage (double voltage)

  - Σ-V Series SGM□V/SGDV User's Manual
    Design and Maintenance Rotational Motor/Analog Voltage and Pulse Train Reference (SIEPS80000045)
  - Σ-V Series SGM□V/SGDV User's Manual Design and Maintenance Rotational Motor/ MECHATROLINK-II Communications
    Reference (SIEPS80000046)

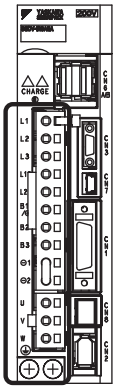
3.2 Main Circuit Wiring

The names, specifications, and functions of the main circuit terminals required for trial operation are given below.

3.2.1 Names and Functions of Main Circuit Terminals



Analog Pulse Models



M-II Models

Terminal Symbol	Name	Main Circuit Power Supply Voltage (V)	Functions
L1, L2, L3	Main circuit power supply input terminal	200	Three-phase 200 to 230 VAC$^{+10\%, -15\%}$ (50/60 H)
		400	Three-phase 380 to 480VAC$^{+10\%, -15\%}$ (50/60 Hz)
U, V, W	Servomotor connection terminals	–	Connects to the servomotor.
L1C, L2C	Control circuit power supply input terminal	200	Single-phase 200 to 230 VAC$^{+10\%, -15\%}$ (50/60 Hz)
24V, 0V		400	24 VDC (±15%)
⏚	Ground terminals	–	Connects to the power supply ground terminals and servomotor ground terminal.

(cont'd)

Terminal Symbol	Name	Main Circuit Power Supply Voltage (V)	Functions
B1, B2	External regenerative resistor connection terminal	200	Normally not connected. Connect an external regenerative resistor (provided by customer) between B1 and B2 if the regenerative capacity is insufficient.
B1, B2, B3		200	Normally short B2 and B3 (for an internal regenerative resistor). Remove the wire between B2 and B3 and connect an external regenerative resistor (provided by customer) between B1 and B2 if the capacity of the internal regenerative resistor is insufficient.
		400	
⊕1, ⊕2	DC reactor for harmonic suppression terminal	200	Normally short ⊕1 and ⊕2. If a countermeasure against power supply harmonic waves is needed, connect a DC reactor between ⊕1 and ⊕2.
		400	
⊖	Main circuit minus terminal	–	Normally not connected.

3.2.2 Wiring the Main Circuit Terminal Block (Spring Type)

The main circuit terminal block consists of the main circuit terminals and the control power terminals.

- SERVOPACKs with a detachable main circuit terminal block:
  SGDV- R70A, -R90A, -1R6A, -2R8A, -3R8A, -5R5A, 1R9D, -3R5D, -5R4D
- SERVOPACKs with a fixed main circuit terminal block:
  SGDV-8R4D, -120D, -170D

How to wire the main circuit terminal block is described below.

⚠ CAUTION

- Observe the following precautions when wiring main circuit power supply terminal blocks.
  - Do not turn ON the power to the SERVOPACK until all wiring has been completed, including the main circuit terminal blocks.
  - Remove detachable main circuit terminal blocks from the SERVOPACK prior to wiring.
  - Insert only one main circuit cable per opening in the main circuit terminal block.
  - Make sure that no part of the core wire comes into contact with (i.e., short-circuit) adjacent wires.

3.4 Model and Capacity of Peripheral Device

3.4.1 Molded-case Circuit Breaker and Fuse Capacity

Main Circuit Power Supply	Maximum Applicable Servomotor Capacity (kW)	SERVO PACK Model SGDV-	Power Supply Capacity per SERVO PACK (kVA)	Current Capacity		Inrush Current	
				Main Circuit (Arms)	Control Circuit (Arms)	Main Circuit (A0-p)	Control Circuit (A0-p)
Three-phase 200 V	0.05	R70A	0.2	1.0	0.2	33	70
	0.1	R90A	0.3	1.0			
	0.2	1R6A	0.6	2.0			
	0.4	2R8A	1	3.0			
	0.5	3R8A	0.9	3.0			33
	0.75	5R5A	1.6	6.0			
Three-phase 400 V	0.5	1R9D	1.1	1.4	1.2	17	–
	1.0	3R5D	2.3	2.9			
	1.5	5R4D	3.5	4.3			
	2.0	8R4D	4.5	5.8	1.4	34	
	3.0	120D	7.1	8.6			
	5.0	170D	11.7	14.5	1.4	57	

Note: To conform to a low voltage directive, be sure to install a fuse or molded-case circuit breaker on the input side to prevent the SERVOPACK from being damaged if a short-circuit occurrs.

3.4.2 Noise Filters, Magnetic Contactors, Surge Protectors, and DC Reactors

Main Circuit Power Supply	SERVO PACK Model	Recommended Noise Filter		Magnetic Contactor	Surge Protector	DC Reactor
	SGDV-	Type	Specifications			
Three-phase 200 V	R70A	FN258L-7/07	Three-phase 480 VAC, 7 A	SC-03 (20 A)	R·C·M-601BUZ-4	–
	R90A					X5071
	1R6A					X5070
	2R8A					X5069
	3R8A					X5061
	5R5A	FN258L-16/07	Three-phase 480 VAC, 16 A	SC-4-1 (35 A)		
Three-phase 400 V	1R9D	FN258L-7/07	Three-phase 480 VAC, 7 A		Built-in	X5074
	3R5D					X5075
	5R4D					
	8R4D	FN258L-16/07	Three-phase 480 VAC, 16 A	SC-5-1 (35 A)		X5076
	120D					
	170D	FMAC-0934-5010	Three-phase 480 VAC, 35 A	SC-1N (50 A)		X5077

Note: 1. If several SERVOPACKs are wired at the same time, select the proper magnetic contactors according to the total capacity.
2. When an RoHS-compliant device is required, contact the manufacture of each device to confirm that the device conforms to the RoHs directive.
3. The following table shows the manufacturers of each device.

Peripheral Device	Manufacturer
Noise Filter	FN, FS type: Schaffner Electronic
	FMAC type: SCHURTER AG
Magnetic Contactor	Fuji Electric FA Components & Systems Co., Ltd.
Surge Protector	Okaya Electric Industries Co., Ltd.
DC Reactor	Yaskawa Controls Co., Ltd.

■ Noise Filter for Brake Power Supply

Use an FN2070-6/07 made by SCHAFFNER for a servomotor of 400 W or less.