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Cable Specifications and Peripheral Devices

Ratings and specifications for peripheral devices, as well as cable specifications for digital torque amplifiers are summarized in the tables below.

> ⚠ CAUTION
>
> **Wiring Precautions**
>
> - **Do not bundle or run power and signal lines together in the same duct.**
>   Keep power and signal lines at least 11.81" (30cm) apart.
> - **Use twisted pair or shielded multi-core twisted pair wires for signal and encoder (PG) feedback lines.**
> - **The maximum lengths for signal lines are as follows:**
>   - Maximum of 9.84ft (300cm) for reference input lines.
>   - Maximum of 65.6ft (20m) for PG feedback lines.
>   - Use a cable with 164 ft (50m) specifications for distances over 65.6ft (20m).

Cable Specifications

The following table provides wire size specifications:

External Terminal Name		SGDG Terminal Symbol	Wire Size AWG [in^2 (mm^2)]	
			01GT	04GT
	Main circuit power input terminals	L1, L2 (Single Phase)	16 AWG [HIV 0.002 (1.25)	14 AWG [0.003 (2.0)]
	Servomotor connection terminals	U, V, W	16 AWG [HIV 0.002 (1.25)]	
	Control power supply terminals	L1C, L2C		
	Control I\O signal connector	CN1	Twisted pair or shielded twisted pair wires Core wire at least 28 AWG [0.0002 (0.12)], tinned, annealed copper twisted wires Finished cable dimensions: maximum Φ0.63in (16mm) for CN1 and Φ0.27in (6.8mm) for CN2.	
	PG signal connector	CN2		
	Ground terminal	⏚	14 AWG [HIV 0.003 (2.0)]	

Cable Specifications (cont'd)

External Terminal Name		SGDG Terminal Symbol	Wire Size AWG [in^2 (mm^2)]	
			10GT	15GT
	Main circuit power input terminals	L1, L2, L3 (Three-phase)	14 AWG [HIV 0.003 (2.0)	
	Servomotor connection terminals	U, V, W		
	Control power supply terminals	L1C, L2C	16 AWG [HIV 0.002 (1.25)]	
	Control I\O signal connector	CN1	Twisted pair or shielded twisted pair wires Core wire at least 28 AWG [0.0002 (0.12)], tinned, annealed copper twisted wires Finished cable dimensions: maximum Φ0.63in (16mm) for CN1 and Φ0.27in (6.8mm) for CN2.	
	PG signal connector	CN2		
	Ground terminal	⏚	14 AWG [HIV 0.003 (2.0)]	

Notes:
1. Wire sizes were selected for three cables per bundle at 40°C ambient temperature with the rated current.
2. Use cables with a minimum withstand voltage of 600V for main circuits.
3. If cables are bundled in PVC or metal ducts, consider the reduction ratio of the allowable current.
4. Use heat-resistant cable under high ambient or panel temperatures where normal vinyl cable will rapidly deteriorate.

The following table shows types of cables. It is used in conjunction with the preceding tables.

Cable Type		Temperature Rating of Conductor °C
Name	Composition	
PVC	Standard polyvinyl chloride cable	—
IV	600V PVC cable	60
HIV	Temperature-resistant vinyl cable	75

The following table specifies the appropriate cables for CN1 and CN2 amplifier connectors.

Wire sizes were selected with the expectation of three cables per bundle, at an ambient temperature of 40°C, at the rated current level.

Connector Name	Signal	Description	Specification
Control I/O Signal Connector	CN1	Cable	Use twisted pair or shielded twisted pair wire.
		Applicable wire	(AWG): 24, 26, 28, 30
		Finished cable Dimension	Φ0.63 (Φ16.0) maximum
PG Signal Connector	CN2	Cable	Use Yaskawa cable, or shielded twisted pair wire.
		Applicable wire	(AWG): 24, 26, 28, 30 Use 22 AWG [0.0005in^2 (0.34mm^2)] for the encoder power supply and 26 AWG [0.0002 in^2 (0.14mm^2)] for other signals. These conditions permit wiring distances up to 65.6ft (20m).
		Finished cable Dimension	Φ0.27 (Φ6.8) maximum

Peripheral Device Types and Capacities

Main Circuit Power Supply	Amplifier Model		Control Power Required (W)	Applicable Servomotor	Power Supply				Recommended Noise Filter**		Motor Magnetic Contactor
	Capacity (kW)	SGDG-			Capacity per Amplifier (kVA)	Rated Main Power (A_{rms})	Maximum Inrush Current (A_{rms})	MCCB or Fuse Capacity* (A_{rms})	Model	Specifications	
Single-phase 100V	0.10	01GT	13	SGMAH-A3B	0.15	1.1	28	4	Fn2070-6/07	Single-phase 250V$_{ac}$ 6A	(10A) or equivalent
		04GT		SGMAH-01B	0.40	2.0					
				SGMPH-01B							
	0.20			SGMAH-02B	0.60	5.2		6	Fn2070-10/07	Single-phase 250V$_{ac}$ 10A	
				SGMPH-02B							
Single-phase 200V	0.10	01GT		SGMAH-A3A	0.20	0.82		4	Fn2070-6/07	Single-phase 250V$_{ac}$ 6A	
				SGMAH-A5A	0.25	1.1					
				SGMAH-01A	0.40	2.0					
				SGMPH-01A							
	0.20	04GT		SGMAH-02A	0.75	3.4					
				SGMPH-02A							
	0.40			SGMAH-04A	1.2	5.5		8	Fn2070-10/07	Single-phase 250V$_{ac}$ 10A	(20A) or equivalent
				SGMPH-04A							
	1.5	15GT	15	SGMAH-08 SGMPH-08	2.1	11.0		11	Fn2070-16/07	Single-phase 250V$_{ac}$ 16A	
				SGMPH-15	4.0	19.0		19	Fn350-30/33	Single-phase 250V$_{ac}$ 30A	35A or equivalent
Three-phase 200V	0.5	10GT		SGMGH-05A□A	1.4	4.0		4	Fn258L-16/07	Three-phase 480V$_{ac}$ 16A	(8A) or equivalent
	1.0			SGMAH-08A	1.9	5.4		7			(20A) or equivalent
				SGMPH-08A							
				SGMGH-09A□A	2.3	7.0					
				SGMSJ-10A							
	1.5	15GT		SGMPH-15A	3.2	9.5		10			
				SGMGH-13A□A							
				SGMSJ-15A							

* Size per local code requirements. Typical fuse interrupting characteristics at 25°C: 200% for 2s minimum; 700% for 0.01s minimum.

** The Fn□□□□ noise filter is manufactured by Schaffner Corporation. Specifications are available at: www.schaffner.com .

Peripheral Device Manufacturers

J.S.T. Corporation
1957 South Lakeside Drive
Waukegan, Illinois 60085

Phone (847) 473-1957
http://www.jst.com

Molex (Headquarters)
(Note: not selling 2CN serial encoder connector in the US)
2222 Wellington Court
Lisle, Illinois 60532

Phone: (630) 527-4474
Fax: (630) 548-2897

(Connector information is not available from Molex or Yaskawa)

For literature requests or Molex support for the 2CN connector, the Chicago area distributor is TTI. Ask for the Yaskawa inside sales representative.
1-800-CALLTTI
(1-800-225-5884)

Schaffner EMC Inc.
52 Mayfield Ave.
Edison, New Jersey 08837

Phone: 1-800 367-5566
(732) 225-9533
Fax: (732) 225-4789
http://www.shaffner.com

TDK Corporation of America
1600 Feehanville Dr.
Mount Prospect, Illinois 60056

Phone: (847) 803-6100
Fax: (847) 803-6296

Tokin America
32950 Alvarado-Niles Rd.
Suite 500
Union City, California 94507

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