



# Cable Specifications and Peripheral Devices


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

 <b>CAUTION</b>
<b>Wiring Precautions</b>
<ul style="list-style-type: none"> <li>• <b>Do not bundle or run power and signal lines together in the same duct.</b> Keep power and signal lines at least 11.81" (30cm) apart.</li> <li>• <b>Use twisted pair or shielded multi-core twisted pair wires for signal and encoder (PG) feedback lines.</b></li> <li>• <b>The maximum lengths for signal lines are as follows:</b> <ul style="list-style-type: none"> <li>• Maximum of 9.84ft (300cm) for reference input lines.</li> <li>• Maximum of 65.6ft (20m) for PG feedback lines.</li> <li>• Use a cable with 164 ft (50m) specifications for distances over 65.6ft (20m).</li> </ul> </li> </ul>

## Cable Specifications


The following table provides wire size specifications:


External Terminal Name		SGDH Terminal Symbol	Wire Size AWG [in <sup>2</sup> (mm <sup>2</sup> )]				
			A3AE	A5AE	01AE	02AE	04AE
for 200V	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 $\Phi$ 0.63in (16mm) for CN1 and $\Phi$ 0.27in (6.8mm) for CN2.				
	PG signal connector	CN2					
	Ground terminal		14 AWG [HIV 0.003 (2.0)]				


External Terminal Name		SGDH Terminal Symbol	Wire Size AWG [in <sup>2</sup> (mm <sup>2</sup> )]	
			08AE-S	15AE-S
for 200V	Main circuit power input terminals	L1, L2 (Single Phase)	14 AWG [0.003 (2.0)]	12 AWG [0.0054 (3.5)]
	Servomotor connection terminals	U, V, W		
	Control power supply terminals	L1C, L2C	16 AWG [HIV 0.002 (1.25)]	14 AWG [0.003 (2.0)]
	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 $\Phi$ 0.63in (16mm) for CN1 and $\Phi$ 0.27in (6.8mm) for CN2.	
	PG signal connector	CN2		
	Ground terminal		14 AWG [HIV 0.003 (2.0)]	

# 100/200V Sigma II Servo System

## Cable Specifications (cont'd)


External Terminal Name		SGDH Terminal Symbol	Wire Size AWG [in <sup>2</sup> (mm <sup>2</sup> )]				
			05AE	08AE	10AE	15AE	20AE
for 200V	Main circuit power input terminals	L1, L2, L3 (Three-phase)	14 AWG [HIV 0.003 (2.0)]			12 AWG [HIV 0.005 (3.5)]	
	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. See page 4 for details. Finished cable dimensions: maximum $\Phi$ 0.63in (16mm) for CN1 and $\Phi$ 0.27in (6.8mm) for CN2.				
	PG signal connector	CN2					
	Ground terminal		14 AWG [HIV 0.003 (2.0)]				

External Terminal Name		SGDH Terminal Symbol	Wire Size AWG [in <sup>2</sup> (mm <sup>2</sup> )]			
			30AE	50AE	60AE	75AE
for 200V	Main circuit power input terminals	L1, L2, L3 (Three-phase)	12 AWG [HIV 0.005 (3.5)]	10 AWG [HIV 0.009 (5.5)]	8 AWG [HIV 0.012 (8)]	6 AWG [HIV 0.022 (14)]
	Servomotor connection terminals	U, V, W	10 AWG [HIV 0.009 (5.5)]	8 AWG [HIV 0.012 (8)]	6 AWG [HIV 0.022 (14)]	
	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. See page 4 for details. Finished cable dimensions: maximum $\Phi$ 0.63in (16mm) for CN1 and $\Phi$ 0.27in (6.8mm) for CN2.			
	PG signal connector	CN2				
	Ground terminal		14 AWG [HIV 0.003 (2.0)]			

External Terminal Name		SGDH Terminal Symbol	Wire Size AWG [in <sup>2</sup> (mm <sup>2</sup> )]	
			1AAE	1EAE
for 200V	Main circuit power input terminals	L1, L2, L3 (Three-phase)	4 AWG. [HIV 0.022 (14)]	
	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. See page 4 for details. Finished cable dimensions: maximum $\Phi$ 0.63in (16mm) for CN1 and $\Phi$ 0.27in (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.

## Cable Specifications (cont'd)

External Terminal Name		SGDH Terminal Symbol	Wire Size AWG [ $\text{in}^2$ ( $\text{mm}^2$ )]			
			A3BE	A5BE	01BE	02BE
for 100V	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. See page 4 for details. Finished cable dimensions: maximum $\Phi 0.63\text{in}$ (16mm) for CN1 and $\Phi 0.27\text{in}$ (6.8mm) for CN2.			
	PG signal connector	CN2				
	Ground terminal					

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 servo 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
		Finished cable Dimension	$\Phi 0.63$ ( $\Phi 16.0$ ) maximum
PG Signal Connector	CN2	Cable	Use Yaskawa cable, or shielded twisted pair wire.
		Applicable wire	(AWG): 22, 24, 26 Use 22 AWG [0.0005 $\text{in}^2$ (0.34 $\text{mm}^2$ )] for the encoder power supply and 26 AWG [0.0002 $\text{in}^2$ (0.14 $\text{mm}^2$ )] for other signals. These conditions permit wiring distances up to 65.6ft (20m).
		Finished cable Dimension	$\Phi 0.27$ ( $\Phi 6.8$ ) 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)	SGDH-			Capacity per Servo Amplifier (kVA)	Rated Main Power (A <sub>rms</sub> )	Maximum Inrush Current (A <sub>rms</sub> )	MCCB or Fuse Capacity* (A <sub>rms</sub> )	Model	Specifications	
Single-phase 100V	0.03	A3BE	13	SGMAH-A3B	0.15	1.1	28	4	Fn2070-6/07 (or FS5827-4-07)	Single-phase 250V <sub>ac</sub> 6A (4A)	(10A) or equivalent
	0.05	A5BE		SGMAH-A5B	0.25	1.8					
	0.10	01BE		SGMAH-01B	0.40	2.0					
				SGMPH-01B							
	0.20	02BE		SGMAH-02B	0.60	5.2					
				SGMPH-02B							
Single-phase 200V	0.03	A3AE	13	SGMAH-A3A	0.20	0.82	28	4	Fn2070-6/07 (or FS5827-4-07)	Single-phase 250V <sub>ac</sub> 6A (4A)	(20A) or equivalent
	0.05	A5AE		SGMAH-A5A	0.25	1.1					
	0.10	01AE		SGMAH-01A	0.40	2.0					
				SGMPH-01A							
	0.20	02AE		SGMAH-02A	0.75	3.4					
				SGMPH-02A							
	0.40	04AE		SGMAH-04A	1.2	5.5					
				SGMPH-04A							
0.75	08AE-S	SGMAH-08 SGMPH-08	2.1	11.0	11	Fn2070-16/07 (or FS5827-15-07)	Single-phase 250V <sub>ac</sub> 16A (15A)	(20A) or equivalent			
1.5	15AE-S	SGMPH-15	4.0	19.0	19	Fn350-30/33 (or FS5827-25-07)	Single-phase 250V <sub>ac</sub> 30A (25A)	35A or equivalent			
Three-phase 200V	0.50	05AE	15	SGMGH-05AOA	1.4	4.0	56	4	Fn258L-16/07	Three-phase 480V <sub>ac</sub> 16A	(20A) or equivalent
	0.75	08AE		SGMAH-08A	1.9	5.4					
				SGMPH-08A							
	1.0	10AE		SGMGH-09AOA	2.3	7.0					
				SGMSH-10A							
	1.5	15AE		SGMPH-15A	3.2	9.5					
				SGMGH-13AOA							
	2.0	20AE		SGMGH-20AOA	4.3	12.0					
				SGMSH-20A							
	3.0	30AE		SGMGH-30AOA	5.9	17.0					
				SGMSH-30A							
	5.0	50AE		SGMGH-44 SGMSH-50	7.5	24					
6.0	60AE	SGMGH-55	12.5	32	93	32	Fn258L-55/07	Three-phase 480V <sub>ac</sub> 55A	65A or equivalent		
7.5	75AE	SGMGH-75	15.5	41							
11.0	1AAE	SGMGH-1A	19.0	60							
		15.0	1EAE	SGMGH-1E	30.0	80	116	60	FS5559-150-35	Three-phase 250V <sub>ac</sub> 150A	75A or equivalent 100A or equivalent

\* 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](http://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 isTTI.  
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

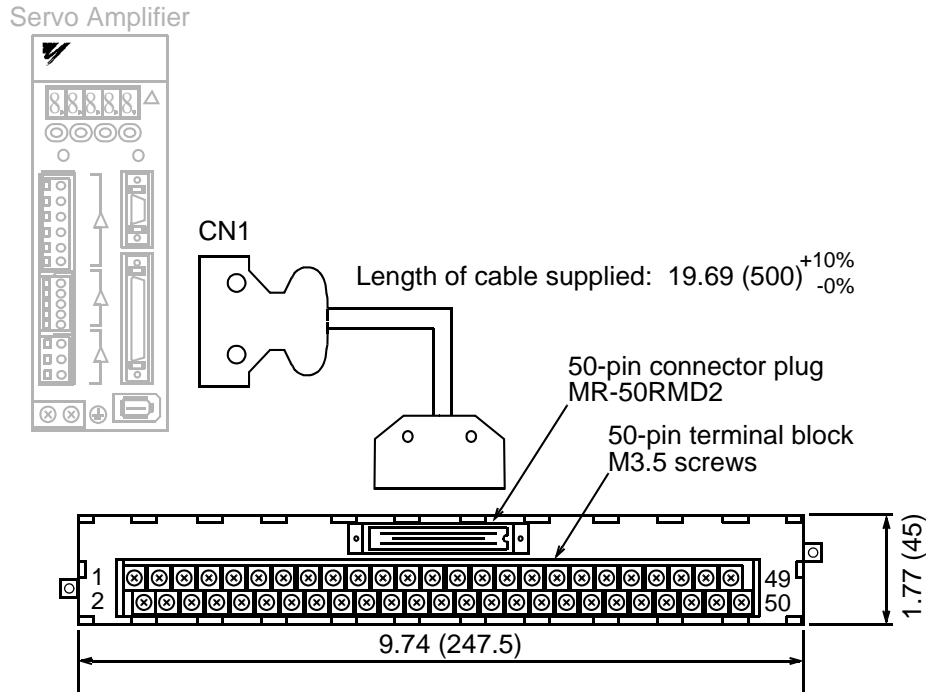
Phone: (847) 803-6100  
Fax: (847) 803-6296

### **Tokin America**

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

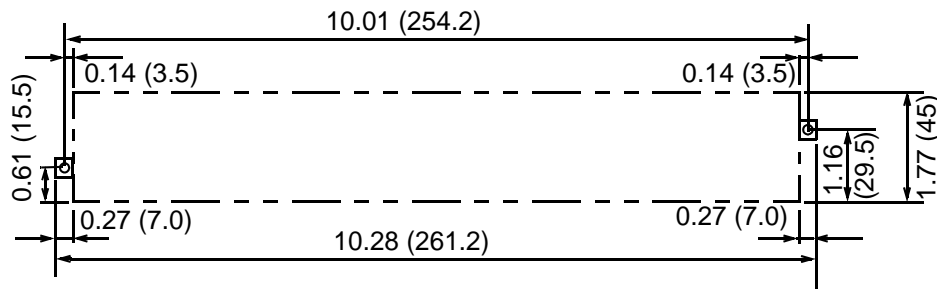
Phone: (510) 324-4110  
Fax: (510) 324-1762  
<http://www.tokin.com>

# Connector Terminal Block Converter Unit JUSP-TA50P



Connector Terminal Block Converter Unit  
JUSP-TA50P\* (cable included)

## Mounting Hole Diagram



\*Terminal specifications : See the following page

# JUSP-TA50P Terminal Block Pin Numbers and Signal Names

SGDH Servo Amplifier			JUSP-TA50P Terminal Block Unit		
Signal Name*		CN1 Pin Number		Connector Number	Terminal Block Number
SG		1		A1	1
SG		2		B1	2
PL1		3		A2	3
SEN		4		B2	4
V-REF		5		A3	5
SG		6		B3	6
PULS		7		A4	7
/PULS		8		B4	8
T-REF		9		A5	9
SG		10		B5	10
SIGN		11		A6	11
/SIGN		12		B6	12
PL2		13		A7	13
/CLR		14		B7	14
CLR		15		A8	15
		16		B8	16
		17		A9	17
PL3		18		B9	18
PCO		19		A10	19
/PCO		20		B10	20
BAT (+)		21		A11	21
BAT (-)		22		B11	22
		23		A12	23
		24		B12	24
/V-CMP+		25		A13	25
/V-CMP-		26		B13	26
/TGON+		27		A14	27
/TGON-		28		B14	28
/S-RDY+		29		A15	29
/S-RDY-		30		B15	30
ALM+		31		A16	31
ALM-		32		B16	32
PAO		33		A17	33
/PAO		34		B17	34
BPO		35		A18	35
/PBO		36		B18	36
ALO1		37		A19	37
ALO2		38		B19	38
ALO3		39		A20	39
/S-ON		40		B20	40
/P-CON		41		A21	41
P-OT		42		B21	42
N-OT		43		A22	43
/ALM-RST		44		B22	44
/P-CL		45		A23	45
/N-CL		46		B23	46
+24V IN		47		A24	47
PSO		48		B24	48
/PSO		49		A25	49
		50		B25	50
Connector Case					

Cable: Supplied with the terminal block

↑P: Indicates twisted pair wires.

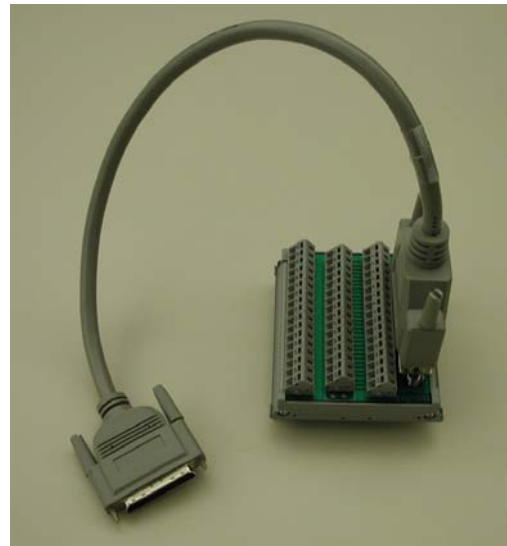
\*Preconfigured amplifier inputs and outputs are listed above as they are designated when the unit is shipped from the factory. Use the connection diagrams on the previous pages for more functional details.

## 1. Summary of Product

- Converter includes 50 pin cage clamp style terminal block, cable, and operating lever
- Functional alternative to JUSP-TA50P<sup>1</sup>
- Mounts to DIN 35 rail
- 50 pin high-density connector attaches directly to the SGDh amplifier CN1 connector
- Lengths available in 0.5, 1, 2 and 3 meter

## 2. Model number

Part Number	Length
JUSP-WA50P-D50	0.5 meter
JUSP-WA50P-01	1 meter
JUSP-WA50P-02	2 meter
JUSP-WA50P-03	3 meter



## 3. Specification

SPECIFICATION	CABLE
AWG	28
# OF WIRES	25 Twisted Pairs
UL /CSA	UL20276 & CSA II A/B
SHIELD	Connected on amp side only
MAX TEMP	60 deg
MAX VOLTAGE	300V
INSUL. RESISTANCE	20MOHMS/250V DC MIN.
SPECIFICATION	TERMINAL BLOCK
WIRE SIZE	AWG OF # 12-28
APPLICABLE WIRE	COPPER
WIRE SIZE WITH FERRULE	AWG OF # 14-24 COPPER (*1)
APPLICABLE FERRULE	WAGO 216 Series
MAX VOLTAGE	125VAC
MAX CURRENT	1A
MIN CURRENT	10uA
INSULATION RESISTANCE	10 <sup>12</sup> OHM-cm
WITHSTAND VOLTAGE	23kV/mm
FLAMMABILITY	UL94V-2
TEMP. RATING	-60C ~ +105 C
APPLICABLE ENVIRONMENT	Same as Yaskawa amplifier
DIN RAIL MOUNTING	35mm
DIMS (LxHxD)mm	(94.2x85.0x35.4)

\*1) It is not possible to always form a gastight seal when crimping a ferrule; it may not provide optimal performance depending on the application and signal characteristics.

<sup>1</sup> JUSP-TA50P is panel mount, 247.5mm x 45mm (vs. 94.2mm x 85mm) w/ 0.5 meter cable only. Reference Yaskawa Sigma II Servo System catalog at Yaskawa.com for more detail specs on JUSP-TA50P.

**4. Pullout force**

**4-1. Pullout force with copper cable.**

Size of conductor - AWG	Pullout force, pounds (N)
28	1 (4.5)
26	2 (8.9)
24	3 (13.4)
22	4.5 (20)
20	6.75 (30)
18	6.75 (30)
16	9 (40)
14	11.5 (50)
12	13.5 (60)

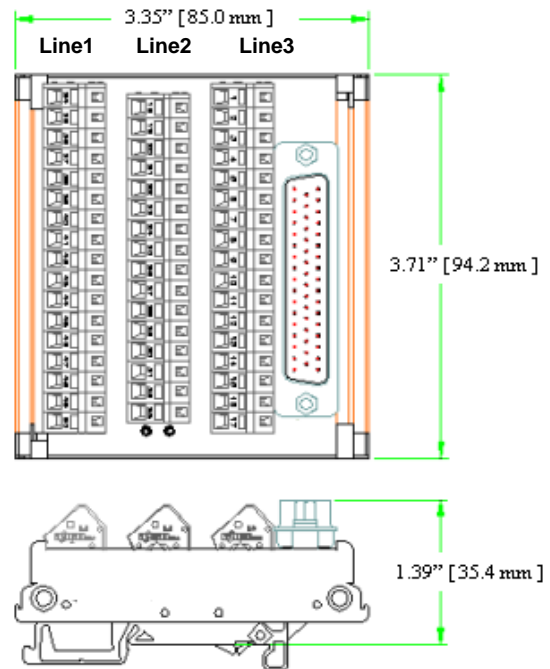
**4-2. Pullout force with copper cable with ferrule.**

Size of conductor - AWG	Pullout force, pounds (N)
24	3 (13.4)
22	4.5 (20)
20	6.75 (30)
18	6.75 (30)
16	9 (40)
14	11.5 (50)

**5. Pin Location and Drawing for Terminal**

Line1	Line2	Line3
34	18	1
35	19	2
36	20	3
37	21	4
38	22	5
39	23	6
40	24	7
41	25	8
41	26	9
43	27	10
44	28	11
45	29	12
46	30	13
47	31	14
48	32	15
48	33	16
50		17

← **Pin Location**



# JUSP-WA50P Terminal Block Pin Numbers and Signal Names

SGDH Servo Amplifier			JUSP-WA50P Terminal Block Unit		
Signal Name*		CN1 Pin Number		Connector Number	Terminal Block Number
SG		1		A1	1
SG		2		B1	2
PL1		3		A2	3
SEN		4		B2	4
V-REF		5		A3	5
SG		6		B3	6
PULS		7		A4	7
/PULS		8		B4	8
T-REF		9		A5	9
SG		10		B5	10
SIGN		11		A6	11
/SIGN		12		B6	12
PL2		13		A7	13
/CLR		14		B7	14
CLR		15		A8	15
		16		B8	16
		17		A9	17
PL3		18		B9	18
PCO		19		A10	19
/PCO		20		B10	20
BAT (+)		21		A11	21
BAT (-)		22		B11	22
		23		A12	23
		24		B12	24
/V-CMP+		25		A13	25
/V-CMP-		26		B13	26
/TGON+		27		A14	27
/TGON-		28		B14	28
/S-RDY+		29		A15	29
/S-RDY-		30		B15	30
ALM+		31		A16	31
ALM-		32		B16	32
PAO		33		A17	33
/PAO		34		B17	34
BPO		35		A18	35
/PBO		36		B18	36
ALO1		37		A19	37
ALO2		38		B19	38
ALO3		39		A20	39
/S-ON		40		B20	40
/P-CON		41		A21	41
P-OT		42		B21	42
N-OT		43		A22	43
/ALM-RST		44		B22	44
/P-CL		45		A23	45
/N-CL		46		B23	46
+24V IN		47		A24	47
PSO		48		B24	48
/PSO		49		A25	49
		50		B25	50
Connector Case					


Cable: Supplied with the terminal block

↑P: Indicates twisted pair wires.

\*Preconfigured amplifier inputs and outputs are listed above as they are designated when the unit is shipped from the factory. Use the connection diagrams on the previous pages for more functional details.

## Cable Specifications and Peripheral Devices

Ratings and specifications for peripheral devices, as well as cable specifications for servo 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.

### Cable Specifications

The following table provides wire size specifications:

External Terminal Name		SGDH Terminal Symbol	Wire Size AWG [in <sup>2</sup> (mm <sup>2</sup> )]				
			05DE	10DE	15DE	20DE	30DE
for 400V	Main circuit power input terminals	L1, L2, L3 (Three-phase)	16 AWG [HIV 0.0019 (1.25)]			14 AWG [0.003 (2.0)]	
	Servomotor connection terminals	U, V, W					
	Control power supply terminals	L1C, L2C	16 AWG [HIV 0.0019 (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. See page 8 for details. Finished cable dimensions: maximum $\Phi$ 0.63in (16mm) for CN1 and $\Phi$ 0.27in (6.8mm) for CN2.				
	PG signal connector	CN2					
	Ground terminal		14 AWG [HIV 0.003 (2.0)]				

External Terminal Name		SGDH Terminal Symbol	Wire Size AWG [in <sup>2</sup> (mm <sup>2</sup> )]				
			50DE	60DE	75DE	1A DE	1E DE
for 400V	Main circuit power input terminals	L1, L2, L3 (Three-phase)	HIV 3.5 (0.005)		HIV 5.5 (0.009)	HIV 8 (0.012)	HIV 14 (0.022)
	Servomotor connection terminals	U, V, W	HIV 3.5 (0.005)	HIV 5.5 (0.009)	HIV 5.5 (0.009)	HIV 8 (0.012)	HIV 14 (0.022)
	Control power supply terminals	L1C, L2C	16 AWG [HIV 0.0019 (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. See page 8 for details. Finished cable dimensions: maximum $\Phi$ 0.63in (16mm) for CN1 and $\Phi$ 0.27in (6.8mm) for CN2.				
	PG signal connector	CN2					
	Ground terminal		14 AWG [HIV 0.003 (2.0)]				

External Terminal Name		SGDH Terminal Symbol	Wire Size AWG [in <sup>2</sup> (mm <sup>2</sup> )]				
			2BDE	3ZDE	3GDE	4EDE	5EDE
for 400V	Main circuit power input terminals	⊕ L1/R, L2/S, L3/T	6AWG [HIV 0.022 (14)]		4AWG [HIV 0.034 (22)]	2AWG [HIV 0.046 (30)]	1AWG [HIV 0.059 (38)]
	Servomotor connection terminals	⊕ U, V, W	6AWG [HIV 0.022 (14)]	4AWG [HIV 0.034 (22)]	2AWG [HIV 0.046 (30)]	1AWG [HIV 0.059 (38)]	1AWG [HIV 0.077 (50)]*
	Control power supply terminals	DC24P, DC24N	18 AWG [HIV 0.0015 (1.0)]				
	Heatsink fan power	380~480V, OV	18 AWG [HIV 0.0015 (1.0)]				
	Fan power terminals	⊕ U(A), V(B), W(C)	18 AWG [HIV 0.0015 (1.0)]				
	Regenerative resistor connector	B1, B2	14 AWG [HIV 0.003 (2.0)]				
	Dynamic brake power connector	DU, DV, DW	16 AWG [HIV 0.002 (1.25)]				
	Dynamic brake control power	DB24, DBON	16 AWG [HIV 0.002 (1.25)]				

\*The larger dimension falls within the limits of 1AWG.

- 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

# 400V Sigma II Servo Systems

The following table specifies the cables for CN1 and CN2 servo 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
		Finished cable Dimension	Φ0.63 (Φ16.0) maximum
PG Signal Connector	CN2	Cable	Use Yaskawa cable, or shielded twisted pair wire.
		Applicable wire	(AWG): 22, 24, 26 Use 22 AWG [0.0005 (0.34)] for the encoder power supply and 26 AWG [0.0002 (0.14)] 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)	SGDH-			Capacity per Servo Amplifier (kVA)	Rated Input (A <sub>rms</sub> )	Maximum Inrush Current (A <sub>rms</sub> )	MCCB or Fuse Capacity* (A <sub>rms</sub> )	Model	Specifications	
Three-phase 400V	0.45	05DE	15	SGMGH-05D□A	1.2	2.0	28	1.7	Fn258L-7/07 (or FS5826-6-07)	Three-phase 480V <sub>ac</sub> 7A (6A)	10A or equivalent
	1.0	10DE		SGMGH-09D□A	2.3	3.5		3.4			
				SGMSH-10D							
	1.5	15DE		SGMUH-10D	3.2	4.8	4.6				
				SGMGH-13D□A							
	2.0	20DE		SGMGH-20D□A	4.9	6.0	7.1				
				SGMSH-20D							
	3.0	30DE		SGMGH-30D□A	6.8	8.5	9.8				
				SGMSH-30D							
				SGMUH-30D							
	5.0	50DE		SGMGH-44D	10.3	14.9	58	14.9	FS5559-35/33 (or FS5827-30-07)	Three-phase 480V <sub>ac</sub> 35A (30A)	40A or equivalent
	6.0	60DE		SGMSH-50D	12.4	17.8	93	17.8			
	7.5	75DE	SGMGH-75D	15.4	22.3	22.3					
	11.0	1ADE	SGMGH-1AD	22.6	32.7	116	32.7	FS5559-80/34 (or FS5826-55-07)	Three-phase 480V <sub>ac</sub> 80A (55A)	75A or equivalent	
	15.0	1EDE	SGMGH-1ED	30.9	44.6		44.6				
22.0	2BDE	150	SGMBH-2B	36.7	53	162	100	Fn258L-75-34	Three-phase 480V <sub>ac</sub>	100A or equivalent	
30.0	3ZDE		SGMBH-3Z	50.1	72	650	150	Fn258L-100-35	Three-phase 480V <sub>ac</sub>	150A or equivalent	
37.0	3GDE		SGMBH-3G	61.8	89			Fn258L-130-35			
45.0	4EDE		SGMBH-4E	75.2	109	1300	225	Fn258L-180-7	Three-phase 480V <sub>ac</sub>	225A or equivalent	
55.0	5EDE		SGMBH-5E	91.9	133						

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

\*\* The Fnzzzz noise filter is manufactured by Schaffner Corporation. Specifications are available at: [www.schaffner.com](http://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

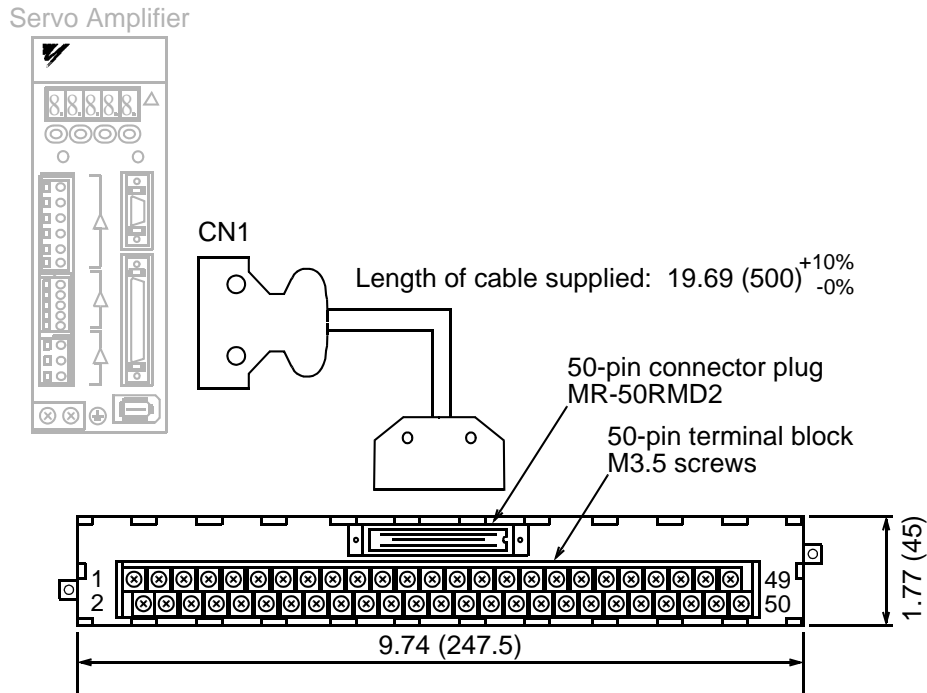
Phone: (847) 803-6100  
Fax: (847) 803-6296

### **Tokin America**

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

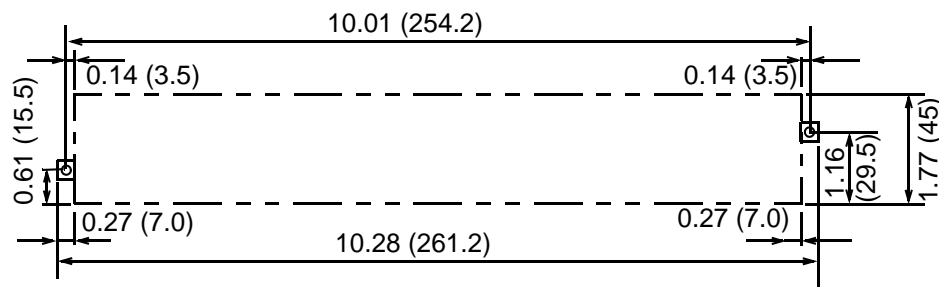
Phone: (510) 324-4110  
Fax: (510) 324-1762  
<http://www.tokin.com>

# Connector Terminal Block Converter Unit JUSP-TA50P



Connector Terminal Block Converter Unit  
JUSP-TA50P\* (cable included)

## Mounting Hole Diagram



# JUSP-TA50P Terminal Block Pin Numbers and Signal Names

SGDH Servo Amplifier			JUSP-TA50P Terminal Block Unit		
Signal Name*		CN1 Pin Number		Connector Number	Terminal Block Number
SG		1		A1	1
SG		2		B1	2
PL1		3		A2	3
SEN		4		B2	4
V-REF		5		A3	5
SG		6	↑P	B3	6
PULS		7		A4	7
/PULS		8	↑P	B4	8
T-REF		9		A5	9
SG		10	↑P	B5	10
SIGN		11		A6	11
/SIGN		12	↑P	B6	12
PL2		13		A7	13
/CLR		14		B7	14
CLR		15	↑P	A8	15
		16		B8	16
		17		A9	17
PL3		18		B9	18
PCO		19		A10	19
/PCO		20	↑P	B10	20
BAT (+)		21		A11	21
BAT (-)		22	↑P	B11	22
		23		A12	23
		24		B12	24
V-CMP+		25		A13	25
V-CMP-		26	↑P	B13	26
/TGON+		27		A14	27
/TGON-		28	↑P	B14	28
/S-RDY-		29		A15	29
/S-RDY-		30	↑P	B15	30
ALM+		31		A16	31
ALM-		32	↑P	B16	32
PAO		33		A17	33
/PAO		34	↑P	B17	34
PBO		35		A18	35
/PBO		36	↑P	B18	36
ALO1		37		A19	37
ALO2		38		B19	38
ALO3		39		A20	39
S-ON		40		B20	40
/P-CON		41		A21	41
P-OT		42		B21	42
N-OT		43		A22	43
/ALM-RST		44		B22	44
/P-CL		45		A23	45
/N-CL		46		B23	46
+24V IN		47		A24	47
PSO		48		B24	48
/PSO		49	↑P	A25	49
		50		B25	50

Cable: Supplied with the terminal block

↑P: Indicates twisted pair wires.

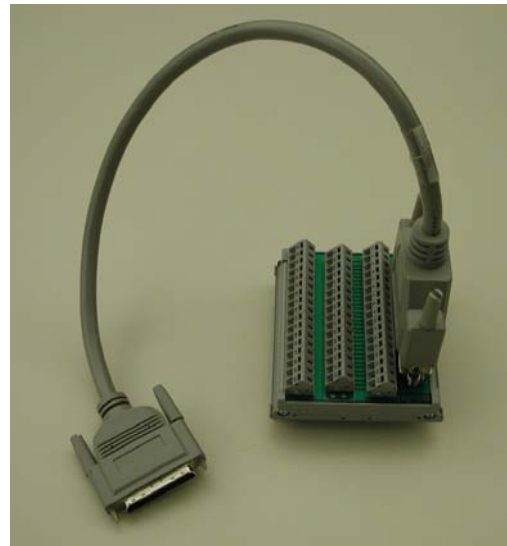
\* Preconfigured amplifier inputs and outputs are listed above as they are designated when the unit is shipped from the factory. Use the connection diagrams on the previous pages for more functional details.

## 1. Summary of Product

- Converter includes 50 pin cage clamp style terminal block, cable, and operating lever
- Functional alternative to JUSP-TA50P<sup>1</sup>
- Mounts to DIN 35 rail
- 50 pin high-density connector attaches directly to the SGDh amplifier CN1 connector
- Lengths available in 0.5, 1, 2 and 3 meter

## 2. Model number

Part Number	Length
JUSP-WA50P-D50	0.5 meter
JUSP-WA50P-01	1 meter
JUSP-WA50P-02	2 meter
JUSP-WA50P-03	3 meter



## 3. Specification

SPECIFICATION	CABLE
AWG	28
# OF WIRES	25 Twisted Pairs
UL /CSA	UL20276 & CSA II A/B
SHIELD	Connected on amp side only
MAX TEMP	60 deg
MAX VOLTAGE	300V
INSUL. RESISTANCE	20MOHMS/250V DC MIN.
SPECIFICATION	TERMINAL BLOCK
WIRE SIZE	AWG OF # 12-28
APPLICABLE WIRE	COPPER
WIRE SIZE WITH FERRULE	AWG OF # 14-24 COPPER (*1)
APPLICABLE FERRULE	WAGO 216 Series
MAX VOLTAGE	125VAC
MAX CURRENT	1A
MIN CURRENT	10uA
INSULATION RESISTANCE	10 <sup>12</sup> OHM-cm
WITHSTAND VOLTAGE	23kV/mm
FLAMMABILITY	UL94V-2
TEMP. RATING	-60C ~ +105 C
APPLICABLE ENVIRONMENT	Same as Yaskawa amplifier
DIN RAIL MOUNTING	35mm
DIMS (LxHxD)mm	(94.2x85.0x35.4)

\*1) It is not possible to always form a gastight seal when crimping a ferrule; it may not provide optimal performance depending on the application and signal characteristics.

<sup>1</sup> JUSP-TA50P is panel mount, 247.5mm x 45mm (vs. 94.2mm x 85mm) w/ 0.5 meter cable only. Reference Yaskawa Sigma II Servo System catalog at Yaskawa.com for more detail specs on JUSP-TA50P.

**4. Pullout force**

**4-1. Pullout force with copper cable.**

Size of conductor - AWG	Pullout force, pounds (N)
28	1 (4.5)
26	2 (8.9)
24	3 (13.4)
22	4.5 (20)
20	6.75 (30)
18	6.75 (30)
16	9 (40)
14	11.5 (50)
12	13.5 (60)

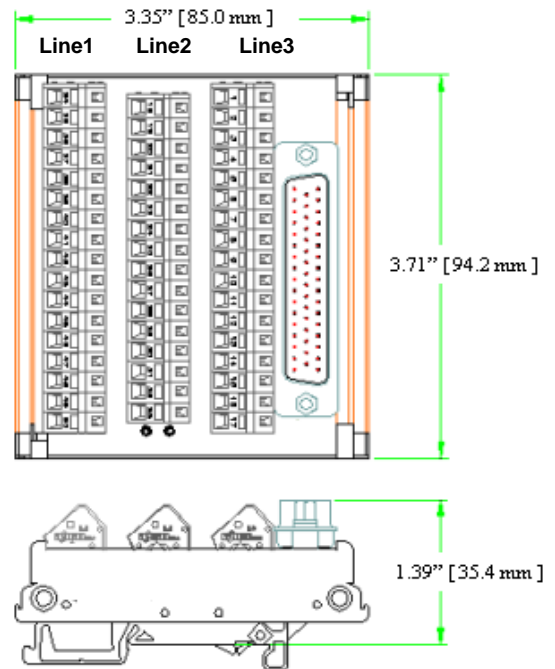
**4-2. Pullout force with copper cable with ferrule.**

Size of conductor - AWG	Pullout force, pounds (N)
24	3 (13.4)
22	4.5 (20)
20	6.75 (30)
18	6.75 (30)
16	9 (40)
14	11.5 (50)

**5. Pin Location and Drawing for Terminal**

Line1	Line2	Line3
34	18	1
35	19	2
36	20	3
37	21	4
38	22	5
39	23	6
40	24	7
41	25	8
41	26	9
43	27	10
44	28	11
45	29	12
46	30	13
47	31	14
48	32	15
48	33	16
50		17

← **Pin Location**



# JUSP-WA50P Terminal Block Pin Numbers and Signal Names

SGDH Servo Amplifier			JUSP-WA50P Terminal Block Unit		
Signal Name*		CN1 Pin Number		Connector Number	Terminal Block Number
SG		1		A1	1
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SG		6		B3	6
PULS		7		A4	7
/PULS		8		B4	8
T-REF		9		A5	9
SG		10		B5	10
SIGN		11		A6	11
/SIGN		12		B6	12
PL2		13		A7	13
/CLR		14		B7	14
CLR		15		A8	15
		16		B8	16
		17		A9	17
PL3		18		B9	18
PCO		19		A10	19
/PCO		20		B10	20
BAT (+)		21		A11	21
BAT (-)		22		B11	22
		23		A12	23
		24		B12	24
/V-CMP+		25		A13	25
/V-CMP-		26		B13	26
/TGON+		27		A14	27
/TGON-		28		B14	28
/S-RDY+		29		A15	29
/S-RDY-		30		B15	30
ALM+		31		A16	31
ALM-		32		B16	32
PAO		33		A17	33
/PAO		34		B17	34
BPO		35		A18	35
/BPO		36		B18	36
ALO1		37		A19	37
ALO2		38		B19	38
ALO3		39		A20	39
/S-ON		40		B20	40
/P-CON		41		A21	41
P-OT		42		B21	42
N-OT		43		A22	43
/ALM-RST		44		B22	44
/P-CL		45		A23	45
/N-CL		46		B23	46
+24V IN		47		A24	47
PSO		48		B24	48
/PSO		49		A25	49
		50		B25	50
Connector Case					

Cable: Supplied with the terminal block

↑P: Indicates twisted pair wires.

\*Preconfigured amplifier inputs and outputs are listed above as they are designated when the unit is shipped from the factory. Use the connection diagrams on the previous pages for more functional details.