e-Front runners

FUJI SERVO SYSTEM
FALDIC-*W* Series

MEH549a

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Simple & Smart

Servo system for evolving machines

FALDIC W

FUJI SERVO SYSTEM

The FALDIC-W – a brand new basic model of the FALDIC Series inheriting the functions and performance of the FALDIC-α and FALDIC-β. The FALDIC Series keeps evolving to meet all market requirements.

The new FALDIC-W has been developed with a built-in 17-bit encoder as a standard feature. In addition to Vibration Suppressing Control as a standard FALDIC series servo system feature, you can select the rated motor speed as desired to match your particular application.

Wide Range

0.05 kW | 0.1 kW | 0.2 kW | 0.4 kW | 0.5 kW | 0.75 kW | 0.85 kW | 1 kW | 1.3 kW | 1.5 kW | 2 kW

Low Inertia Series (GYS Motor)
Rated speed: 3000 r/min

Middle Inertia Series (GYG Motor)
Rated speed: 2000 r/min

Middle Inertia Series (GYG Motor)
Rated speed: 1500 r/min

Features

High-resolution encoder: 131072 pulses (17-bit)
Ensures stable performance even at low speed.

Vibration Suppressing Control Function equipped as standard
Suppresses mechanical vibration to the limit.

Two RS-485 ports as standard
Realizes the integral control of parameters (Maximum 31-axis connection).

- Test operation function
- Monitor output function
- Side-by-side installation
- IP67 (Servomotor)
- Global standards
- Control power back-up function
- Easy tuning
- Servo analysis function

Low Inertia Series (GYS Motor)

Rated speed: 3000 r/min

Input power supply	Rated output	Motor type (standard type)	Amplifier type
Single-phase 200 to 230V	0.05 kW	GYS500DC2 – T2A	RYC500D3 – VVT2
	0.1 kW	GYS101DC2 – T2A	RYC101D3 – VVT2
	0.2 kW	GYS201DC2 – T2A	RYC201D3 – VVT2
	0.4 kW	GYS401DC2 – T2A	RYC401D3 – VVT2
Single-phase or 3-phase 200 to 230V	0.75 kW	GYS751DC2 – T2A	RYC751D3 – VVT2

3000 r/min type

Middle Inertia Series (GYG Motor)

Rated speed: 2000 r/min

Input power supply	Rated output	Motor type (standard type)	Amplifier type
Single-phase or 3-phase 200 to 230V	0.5 kW	GYG501CC2 – T2E	RYC501C3 – VVT2
	0.75 kW	GYG751CC2 – T2E	RYC751C3 – VVT2
3-phase 200 to 230V	1 kW	GYG102CC2 – T2E	RYC102C3 – VVT2
	1.5 kW	GYG152CC2 – T2E	RYC152C3 – VVT2
	2 kW	GYG202CC2 – T2E	RYC202C3 – VVT2

2000 r/min type

Middle Inertia Series (GYG Motor)

Rated speed: 1500 r/min

Input power supply	Rated output	Motor type (standard type)	Amplifier type
Single-phase or 3-phase 200 to 230V	0.5 kW	GYG501BC2 – T2E	RYC501B3 – VVT2
3-phase 200 to 230V	0.85 kW	GYG851BC2 – T2E	RYC851B3 – VVT2
	1.3 kW	GYG132BC2 – T2E	RYC132B3 – VVT2

1500 r/min type

Other features

Control power back-up function

Besides the main power input, a control power back-up function is equipped, which is helpful in backing up sensor positions. This system cuts off the main power supply in an emergency, so you do not need to return to the original position each time.

Easy tuning

The servo amplifier itself automatically performs auto tuning by left and right movements. Optimum tuning between the machine and servomotor is attained before positioning adjustment by the host controller.

Servo analysis function

This is a tool installed in the loader to be equipped with a personal computer, which analyzes the "resonance frequencies" inherent in each machine to make effective use of the "vibration suppressing control function," the "Notch Filter," etc.

Test operation function

Continuous reciprocation is supported in addition to JOG operation in a single direction. You can easily check the effective torque by rough actual operation before preparing the host controller.

Feature 1

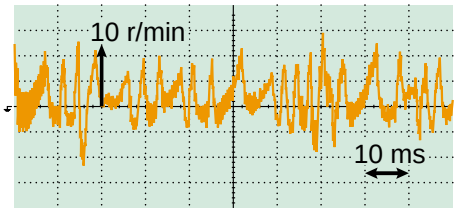
17bit

High-resolution encoder

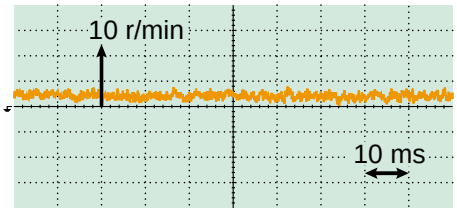
Ensures stable performance even at low speed.

High-resolution encoder generating 131072 pulses installed

Higher resolution reduces rotational flactuation, achieving smooth machine motions.



Conventional encoder (equivalent to 8192 pulses)



17-bit encoder (131072 pulses)

Feature 2

Stop!

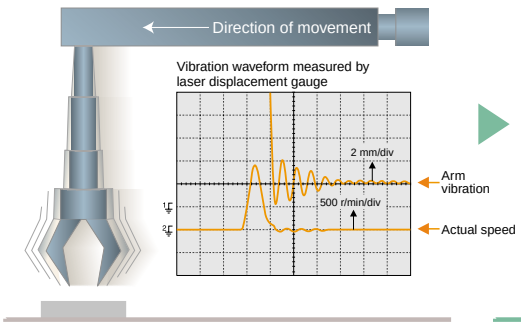
Vibration Suppressing Control Function

Suppresses mechanical vibration to the limit.

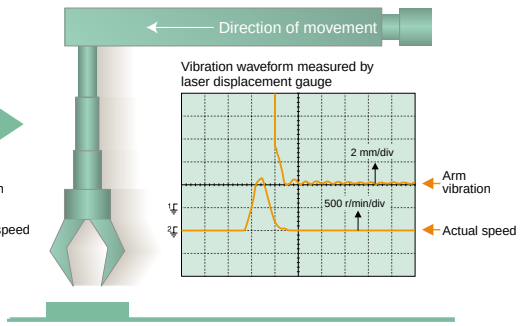
Our original vibration suppressing control function (patent pending)

A "Vibration Suppressing Control Function" is introduced, which is effective in controlling robot arm end vibration.

Fuji's original "Vibration Suppressing Control Function" is installed as a standard feature. It effectively reduces vibration, especially for low-rigidity units such as a robot arm end, and minimizes machine cycle time.



Without vibration suppressing control function



With vibration suppressing control function

Feature 3

SYSTEM

Integral control of parameters

Realizes the integral control of parameters.

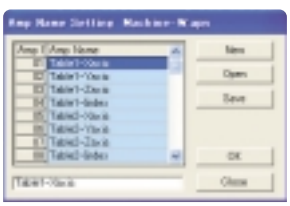
Two RS-485 ports as standard

RS-485 links the host controller to each servo amplifier, enabling the integral control of the servo amplifier parameters by the host controller.

Image of system configuration

Host controller

Servo amplifiers
(Maximum 31-axis connection)



Parameter management screen

Out Put

Monitor output function

An analog monitor output function is equipped on the front of the servo amplifier. Connect a special connector to it to observe signals. Two signals can be observed from the return speed, torque command, positional deviation, etc.

Side-by-side installation

Servo amplifiers can be installed side by side, which saves space required to install them in the machine enclosure.

IP67 (Servomotor)

The servomotor complies with IP67* and can, therefore, be used in an environment where it is exposed to water or dust.

*Excluding the shaft sealing and connector of the GYS motors and the axis through portion of the GYG motors.

Global standards

The FALDIC-W adopts global specifications to support the "CE marking" and "UL/cUL" standards.

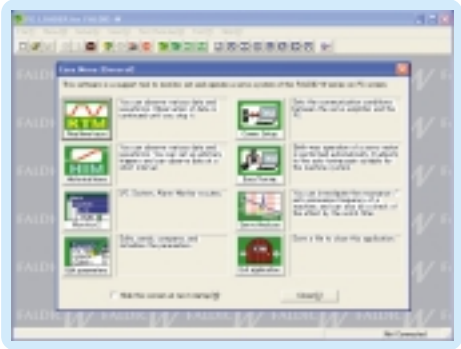
*Applications for certification by these standards are being filed.

Operation and Indication

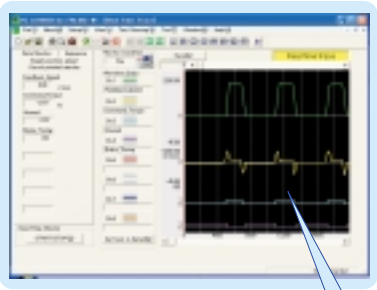
■ Personal computer loader

The loader software for personal computers for the FALDIC-W Series can be downloaded from our website.

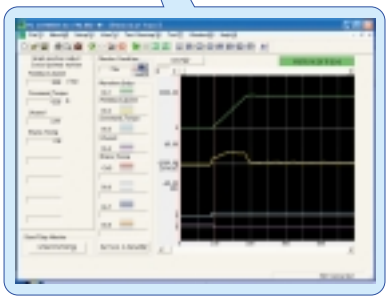
http://www.fujielectric.co.jp/fcs/



Menu screen



Real-time trace



Historical trace

You can set the following with the personal computer loader:

(1) Real-time trace : Speeds and torque curves can be continuously obtained.
(2) Historical trace : Shorter, more detailed curves than real-time trace can be obtained.
(3) Monitor 2 : I/O can be checked and alarm history and the system configuration can be monitored.
(4) Parameter edit : Parameters can be edited, transferred, compared, and initialized.
(5) Communication setting : Set the conditions for communication between the servo amplifier and the personal computer.
(6) Easy tuning : The servomotor is automatically reciprocated with easy settings to adjust it to the auto tuning gain suitable for the machine system.
(7) Servo analysis : Inspects the resonance and antiresonance points of the machine system. The effect of the Notch Filter can also be checked.

■ Keypad

The keypad allows you to use the similar functions as with the personal computer loader.

*The keypad does not display trace but displays a value.

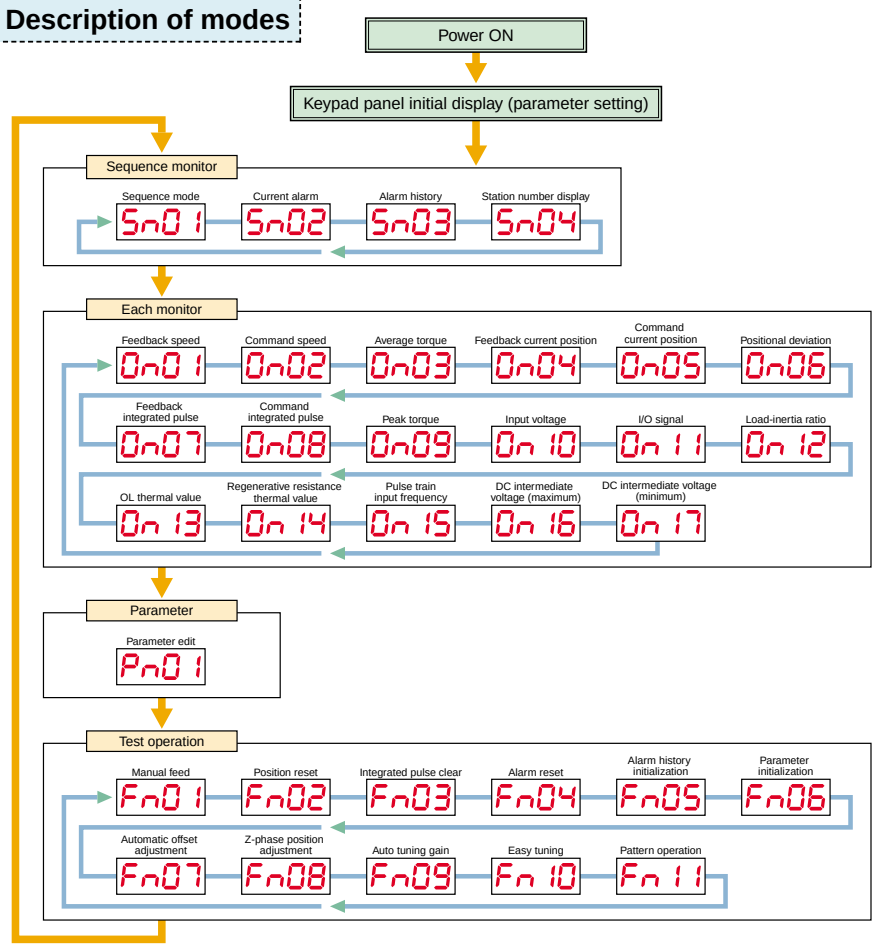
Mode change key
- Changes the mode (MODE).
- Cancels the mode (ESC).

Shift/Enter key
- Shifts the data setting digit to the right (SHIFT + MODE).
- Determines the mode or the value (ENT).

Sub-mode selection key (UP)
- Increases the value (+1).

Sub-mode selection key (DOWN)
- Decreases the value (-1).

Description of modes



Explanation of Model Codes

Servo amplifier

RYC 500 D 3 – V V T 2

Code	[Basic type]
RYC	FALDIC-W Series

Code	[Applicable motor output]
500	50×10^{0}= 0.05 kW
101	10×10^{1}= 0.1 kW
201	20×10^{1}= 0.2 kW
401	40×10^{1}= 0.4 kW
501	50×10^{1}= 0.5 kW
751	75×10^{1}= 0.75 kW
851	85×10^{1}= 0.85 kW
102	10×10^{2}= 1 kW
132	13×10^{2}= 1.3 kW
152	15×10^{2}= 1.5 kW
202	20×10^{2}= 2 kW

Code	[Series]
D	3000 r/min
C	2000 r/min
B	1500 r/min

Code	[Order of development]

Code	[Input voltage]
2	AC 200 V series

Code	[Encoder]
T	17-bit INC

Code	[Upper interface]
V	DI/DO (speed)

Code	[Major functions]
V	Pulse train/speed control

Servomotor

GYS 500 D C 2 – T 2 A – B

Code	[Basic type]
GYS	Low inertia type
GYG	Middle inertia type

Code	[Rated output]
500	50×10^{0}= 0.05 kW
101	10×10^{1}= 0.1 kW
201	20×10^{1}= 0.2 kW
401	40×10^{1}= 0.4 kW
501	50×10^{1}= 0.5 kW
751	75×10^{1}= 0.75 kW
851	85×10^{1}= 0.85 kW
102	10×10^{2}= 1 kW
132	13×10^{2}= 1.3 kW
152	15×10^{2}= 1.5 kW
202	20×10^{2}= 2 kW

Code	[Rated speed]
D	3000 r/min series
C	2000 r/min series
B	1500 r/min series

Code	[Installation method]
C	Flange mounting

Code	[Order of development]

Code	[Brake]
Omitted	Not provided
B	Provided

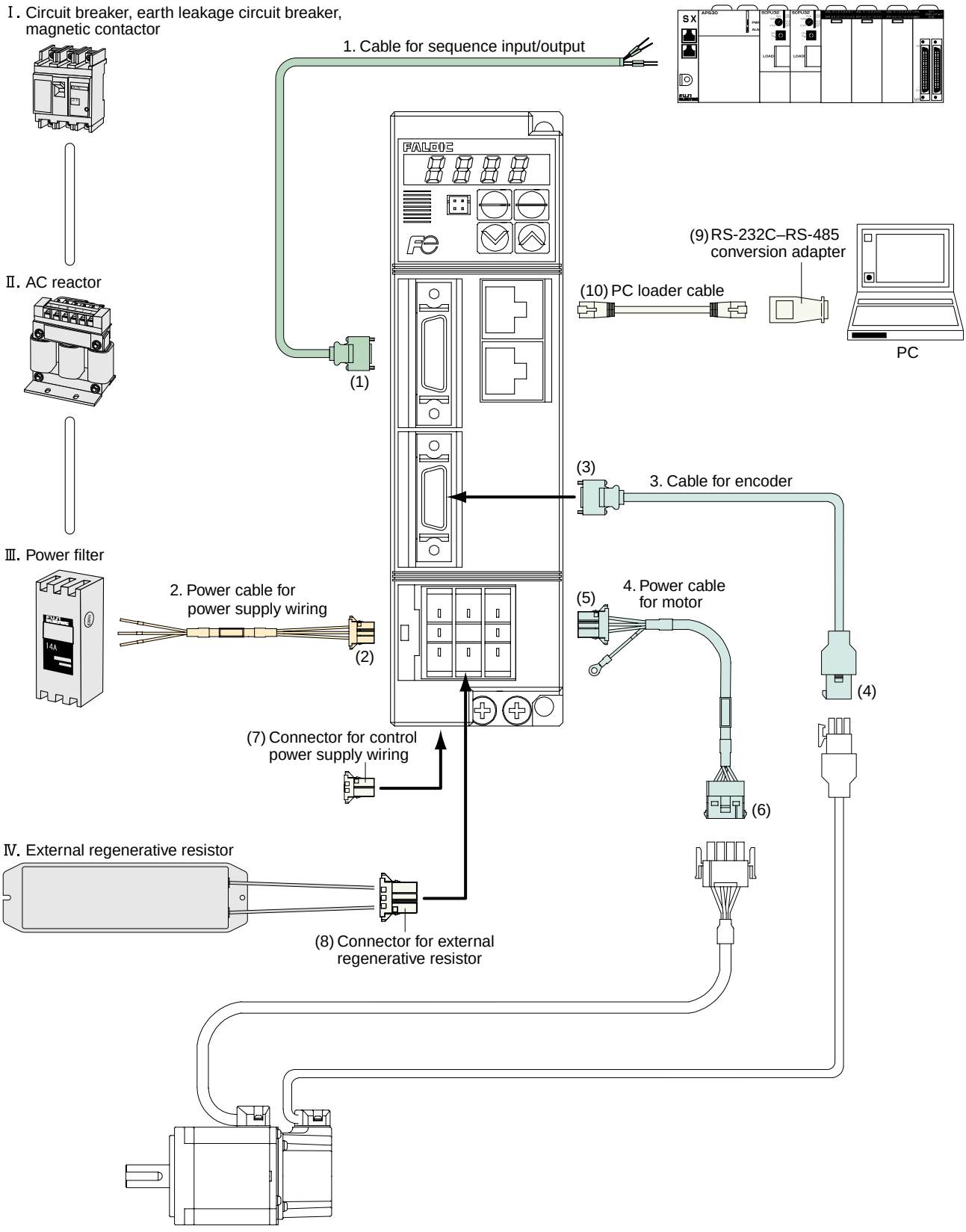
Code	[Oil seal/ shaft]	Applicable motor	
		GYS	GYG
A	Without an oil seal, straight shaft with a key	◎	△
B	Without an oil seal, straight shaft without a key	△	△
E	With an oil seal, straight shaft with a key	△	◎
F	With an oil seal, straight shaft without a key	△	△

◎ : Standard item
△ : Made-to-order item

Code	[Input voltage]
2	AC 200 V series

Code	[Encoder]
T	17-bit INC

Guide to System Configuration



Guide to System Configuration

Connector-provided cable correspondence table

Motor series		Rated speed	Brake	Rated output	Between host and amplifier: 1. Cable for sequence input/output	Between power supply and amplifier: 2. Power cable for power supply wiring	Between amplifier and motor: 3. Cable for encoder	Between amplifier and motor: 4. Power cable for motor
Low inertia	GYS motor	3000 r/min	Not provided	0.05 to 0.75 kW	WSC-D26P03 (3 m)	WSC-S03P03-B (3 m)	WSC-P06P05-D (5 m) WSC-P06P10-D (10 m) WSC-P06P20-D (20 m)	WSC-M04P05-B (5 m) WSC-M04P10-B (10 m) WSC-M04P20-B (20 m)
			Provided	0.05 to 0.75 kW				WSC-M06P05-B (5 m) WSC-M06P10-B (10 m) WSC-M06P20-B (20 m)
Middle inertia	GYG motor	2000 r/min	Not provided	0.5 to 1 kW		WSC-S03P03-B (3 m)	WSC-P06P05-CD (5 m) WSC-P06P10-CD (10 m) WSC-P06P20-CD (20 m)	WSC-M04P05-WD (5 m) (*2) WSC-M04P10-WD (10 m) WSC-M04P20-WD (20 m)
				1.5 to 2 kW		*Terminal block wiring		– (*1)
			Provided	0.5 to 1 kW		WSC-S03P03-B (3 m)		WSC-M04P05-WD (5 m) (*3) WSC-M04P10-WD (10 m) WSC-M04P20-WD (20 m)
				1.5 to 2 kW		*Terminal block wiring		– (*1)
	GYG motor	1500 r/min	Not provided	0.5 to 0.85 kW		WSC-S03P03-B (3 m)		WSC-M04P05-WD (5 m) (*2) WSC-M04P10-WD (10 m) WSC-M04P20-WD (20 m)
				1.3 kW		*Terminal block wiring		– (*1)
			Provided	0.5 to 0.85 kW		WSC-S03P03-B (3 m)		WSC-M04P05-WD (5 m) (*3) WSC-M04P10-WD (10 m) WSC-M04P20-WD (20 m)
				1.3 kW		*Terminal block wiring		– (*1)

*1: The customer is requested to make this cable with a specified connector.
(Specified connector: WSK-M04P-CA for brakes without a brake; WSK-M06P-CA for motors with a brake)
*2: Use the cable together with the connector for motor power supply wiring WSK-M04P-CA.
*3: Use the cable together with the connector for motor power supply wiring WSK-M06P-CA. (The customer is requested to make a cable for brakes.)

Connector correspondence table

*When the customer makes a cable, use any of the connectors shown in this table.

Motor series		Rated speed	Brake	Rated output	Between host and amplifier: (1) Connector for sequence input/output wiring	Between power supply and amplifier: (2) Connector for power supply wiring	Between amplifier and motor: Connector for encoder wiring (3) Amplifier side	Connector for encoder wiring (4) Motor side	Connector for motor power supply wiring (5) Amplifier side	Connector for motor power supply wiring (6) Motor side
Low inertia	GYS motor	3000 r/min	Not provided	0.05 to 0.75 kW	WSK-D26P	WSK-S03P-B	WSK-D20P	WSK-P09P-D	WSK-M03P-B	WSK-M04P
			Provided	0.05 to 0.75 kW						WSK-M06P
Middle inertia	GYG motor	2000 r/min	Not provided	0.5 to 1 kW				WSK-P06P-C		WSK-M04P-CA
				1.5 to 2 kW		*Terminal block wiring			*Terminal block wiring	
			Provided	0.5 to 1 kW		WSK-S03P-B			WSK-M03P-B	WSK-M06P-CA
				1.5 to 2 kW		*Terminal block wiring			*Terminal block wiring	
	GYG motor	1500 r/min	Not provided	0.5 to 0.85 kW		WSK-S03P-B			WSK-M03P-B	WSK-M04P-CA
				1.3 kW		*Terminal block wiring			*Terminal block wiring	
			Provided	0.5 to 0.85 kW		WSK-S03P-B			WSK-M03P-B	WSK-M06P-CA
				1.3 kW		*Terminal block wiring			*Terminal block wiring	

Common options

Name		Type	Description	Remarks
(7) Connector for control power supply wiring		WSK-L02P-D	–	(*4)
(8) Connector for external regenerative resistor		WSK-R03P-B	–	–
For personal computer loader connection	(9) Conversion adapter	NW0H-CNV	RS-232C–RS-485 conversion	A converter and a cable are required.
	(10) Cable	WSC-PCL	2 m	

*4: The 1.3 kW, 1.5 kW, and 2 kW amplifier do not require this connector because they are connected with a terminal block.

Peripheral devices

Rated speed	Input power supply	Servo amplifier type	Applicable motor output [kW]	Ⅰ Circuit breaker	Ⅰ Earth leakage circuit breaker	Ⅰ Magnetic contactor	Surge absorber	Ⅱ AC reactor	Ⅲ Power filter	Ⅳ External regenerative resistor (*1)
3000 [r/min]	Single-phase 200 to 230 V	RYC500D3-VVT2	0.05	EA33AC/3	EG33C/5	SC-5-1(19A)	[For control relay] S1-B-0 Specification: 200 Ω(1/2W) +0.1 μF (Okaya Electric Industries) [For electromagnetic contactor] S2-A-0 Specification: 500 Ω(1/2W) +0.2 μF (Okaya Electric Industries)	ACR2-0.4A	FHF-TA/5/250	WSR-401
		RYC101D3-VVT2	0.1	EA33AC/5				ACR2-0.75A	FHF-TA/10/250	
		RYC201D3-VVT2	0.2	EA33AC/10	EG33C/10			ACR2-1.5A	FHF-TA/20/250	
		RYC401D3-VVT2	0.4	EA53C/15	EG53C/15			ACR2-2.2A		WSR-152
		RYC751D3-VVT2	0.75							
	3-phase 200 to 230 V	RYC751D3-VVT2	0.75					ACR2-1.5A		
2000 [r/min]	Single-phase 200 to 230 V	RYC501C3-VVT2	0.5	EA53C/15	EG53C/15			ACR2-1.5A	FHF-TA/20/250	WSR-152
		RYC751C3-VVT2	0.75					ACR2-2.2A		
	3-phase 200 to 230 V	RYC501C3-VVT2	0.5	EA33AC/10	EG33C/10			ACR2-0.75A	FHF-TA/10/250	
		RYC751C3-VVT2	0.75	EA53C/15	EG53C/15			ACR2-1.5A	FHF-TA/20/250	
		RYC102C3-VVT2	1.0					ACR2-2.2A		DB11-2
		RYC152C3-VVT2	1.5							
		RYC202C3-VVT2	2.0	EA53C/30	EG53C/30			ACR2-3.7A		
1500 [r/min]	Single-phase 200 to 230 V	RYC501B3-VVT2	0.5	EA53C/15	EG53C/15			ACR2-1.5A	FHF-TA/20/250	WSR-152
	3-phase 200 to 230 V	RYC501B3-VVT2	0.5	EA33AC/10	EG33C/10			ACR2-0.75A	FHF-TA/10/250	
		RYC851B3-VVT2	0.85	EA53C/15	EG53C/15			ACR2-1.5A	FHF-TA/20/250	
		RYC132B3-VVT2	1.3					ACR2-2.2A		DB11-2

*1: To connect the external regenerative resistor WSR-401 or WSR-152 to the amplifier, a connector for external regenerative resistors [type: WSK-R03P-B] is required.

Specifications [Servomotor]

Low inertia series (GYS motor) 3000 r/min

Standard specifications

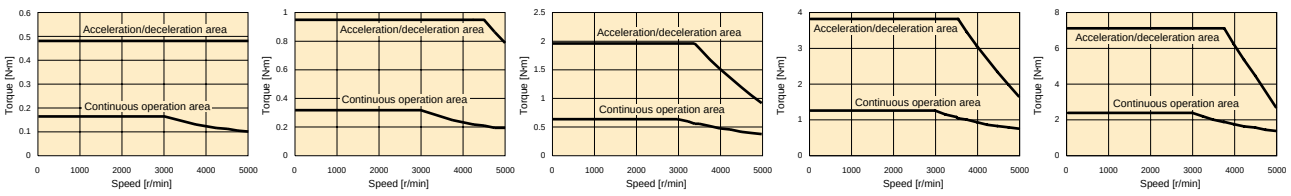
Motor type	GYS500DC2 -T2□	GYS101DC2 -T2□	GYS201DC2 -T2□	GYS401DC2 -T2□	GYS751DC2 -T2□
Rated output [kW]	0.05	0.1	0.2	0.4	0.75
Rated torque [N·m]	0.159	0.318	0.637	1.27	2.39
Max. torque [N·m]	0.478	0.955	1.91	3.82	7.17
Rated speed [r/min]	3000				
Max. speed [r/min]	5000				
Moment of inertia [kg·m²]	0.0192×10^{-4}	0.0371×10^{-4}	0.135×10^{-4}	0.246×10^{-4}	0.853×10^{-4}
Rated current [A]	0.85	0.85	1.5	2.7	4.8
Max. current [A]	2.55	2.55	4.5	8.1	14.4
Winding insulation class	Class B				
Operation duty type	Continuous				
Degree of enclosure protection	Totally enclosed, self-cooled (IP67, excluding the shaft sealing and connectors)				
Terminals (motor)	With 0.3 m flexible leads and connectors				
Terminals (encoder)	With 0.3 m flexible leads and connectors				
Overheat protection	Not provided (The servo amplifier detects temperature.)				
Mounting method	By securing motor flange IMB5 (L51), IMV1 (L52), IMV3 (L53)				
Shaft extension	Straight shaft with a key				
Paint color	N1.5				
Encoder	17-bit encoder				
Vibration level	V5 or below				
Installation place, altitude	For indoor use, 1000 m or below				
Ambient temperature, humidity	-10 to +40 °C, 90 % RH or below (without condensation)				
Vibration resistance [m/s²]	49				
Mass [kg]	0.45	0.55	1.2	1.8	3.4

Motor with a brake

Motor type	GYS500DC2 -T2□-B	GYS101DC2 -T2□-B	GYS201DC2 -T2□-B	GYS401DC2 -T2□-B	GYS751DC2 -T2□-B
Rated output [kW]	0.05	0.1	0.2	0.4	0.75
Rated torque [N·m]	0.159	0.318	0.637	1.27	2.39
Static friction torque [N·m]	0.34		1.27		2.45
Moment of inertia [kg·m²]	0.0223×10^{-4}	0.0402×10^{-4}	0.335×10^{-4}	0.446×10^{-4}	1.203×10^{-4}
Rated DC voltage [V]	24 V DC				
Attraction time [ms]	35		40		60
Release time [ms]	10		20		25
Brake input [W]	6.1		7.3		8.5
Mass [kg]	0.6	0.7	1.7	2.3	4.2

Torque characteristic diagrams (3000r/min)

GYS500DC2-T2□	GYS101DC2-T2□	GYS201DC2-T2□	GYS401DC2-T2□	GYS751DC2-T2□
0.05 kW	0.1 kW	0.2 kW	0.4 kW	0.75 kW



Specifications [Servomotor]

Middle inertia series (GYG motor) 2000 r/min, 1500 r/min

Standard specifications

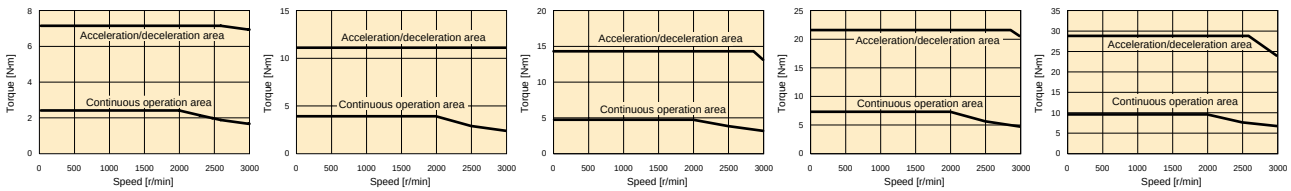
Motor type	GYG501CC2 -T2□	GYG751CC2 -T2□	GYG102CC2 -T2□	GYG152CC2 -T2□	GYG202CC2 -T2□	GYG501BC2 -T2□	GYG851BC2 -T2□	GYG132BC2 -T2□
Rated output [kW]	0.5	0.75	1.0	1.5	2.0	0.5	0.85	1.3
Rated torque [N·m]	2.39	3.58	4.77	7.16	9.55	3.18	5.41	8.28
Max. torque [N·m]	7.2	10.7	14.3	21.5	28.6	9.50	16.2	24.8
Rated speed [r/min]	2000					1500		
Max. speed [r/min]	3000							
Moment of inertia [kg·m²]	7.96×10^{-4}	11.55×10^{-4}	15.14×10^{-4}	22.33×10^{-4}	29.51×10^{-4}	11.55×10^{-4}	15.15×10^{-4}	22.33×10^{-4}
Rated current [A]	3.5	5.2	6.4	10.0	12.3	4.7	7.3	11.5
Max. current [A]	10.5	15.6	19.2	30.0	36.9	14.1	21.9	34.5
Winding insulation class	Class F							
Operation duty type	Continuous							
Degree of enclosure protection	Totally enclosed, self-cooled (IP67, excluding the shaft sealing)							
Terminals (motor)	Cannon connectors							
Terminals (encoder)	Cannon connectors							
Overheat protection	Not provided (The servo amplifier detects temperature.)							
Mounting method	By securing motor flange IMB5 (L51), IMV1 (L52), IMV3 (L53)							
Shaft extension	Straight shaft with a key							
Paint color	N1.5							
Encoder	17-bit encoder							
Vibration level	V10 or below							
Installation place, altitude	For indoor use, 1000 m or below							
Ambient temperature, humidity	-10 to +40 °C, 90 % RH or below (without condensation)							
Vibration resistance [m/s²]	24.5							
Mass [kg]	5.3	6.4	7.5	9.8	12.0	6.4	7.5	9.8

Motor with a brake

Motor type	GYG501CC2 -T2□-B	GYG751CC2 -T2□-B	GYG102CC2 -T2□-B	GYG152CC2 -T2□-B	GYG202CC2 -T2□-B	GYG501BC2 -T2□-B	GYG851BC2 -T2□-B	GYG132BC2 -T2□-B
Rated output [kW]	0.5	0.75	1.0	1.5	2.0	0.5	0.85	1.3
Rated torque [N·m]	2.39	3.58	4.77	7.16	9.55	3.18	5.41	8.28
Static friction torque [N·m]	17							
Moment of inertia [kg·m²]	10×10^{-4}	13.6×10^{-4}	17.2×10^{-4}	24.4×10^{-4}	31.6×10^{-4}	13.6×10^{-4}	17.3×10^{-4}	24.5×10^{-4}
Rated DC voltage [V]	24 V DC ± 10 %							
Attraction time [ms]	120							
Release time [ms]	30							
Brake input [W]	14 (at 20 °C)							
Mass [kg]	8.3	9.4	10.5	12.8	15.0	9.4	10.5	12.8

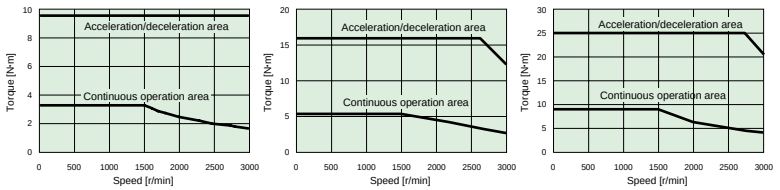
Torque characteristic diagrams (2000r/min)

GYG501CC2-T2□	GYG751CC2-T2□	GYG102CC2-T2□	GYG152CC2-T2□	GYG202CC2-T2□
0.5 kW	0.75 kW	1.0 kW	1.5 kW	2.0 kW



Torque characteristic diagrams (1500r/min)

GYG501BC2-T2□	GYG851BC2-T2□	GYG132BC2-T2□
0.5 kW	0.85 kW	1.3 kW



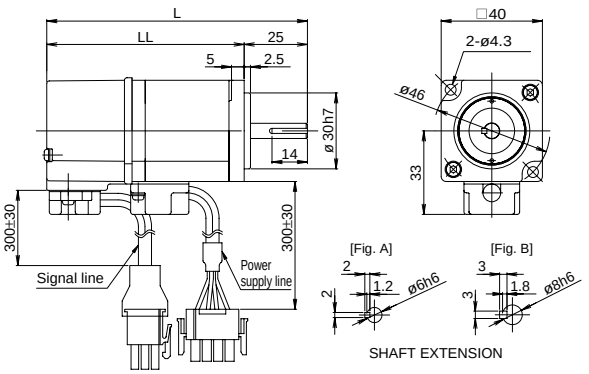
External Dimensions [Servomotor]

Low inertia series (GYS motor) 3000 r/min

Standard type

Rated speed	Rated output	Type	Shaft end shape	Overall length	Dimension (flange)	Mass [kg]
				L	LL	
3000 [r/min]	0.05 kW	GYS500DC2-T2A	Fig. A	103	78	0.45
	0.1 kW	GYS101DC2-T2A	Fig. B	121	96	0.55

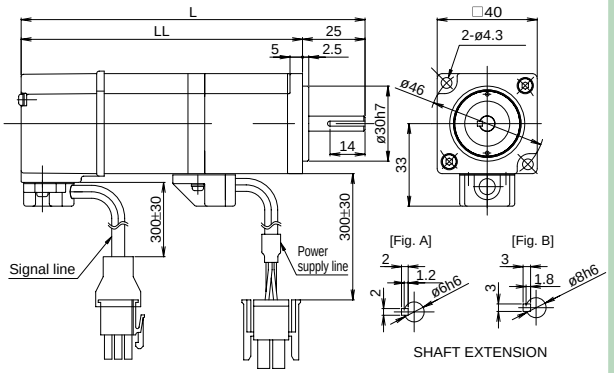
(Unit: mm)



Motor with a brake

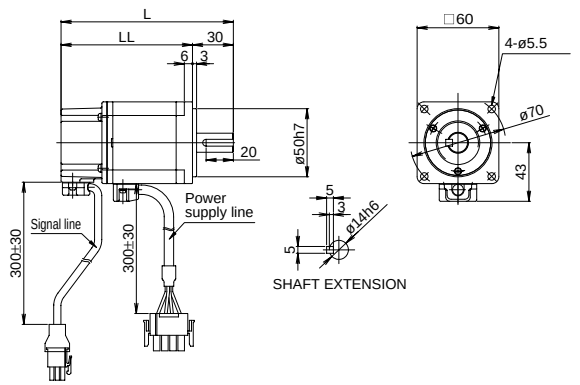
Rated speed	Rated output	Type	Shaft end shape	Overall length	Dimension (flange)	Mass [kg]
				L	LL	
3000 [r/min]	0.05 kW	GYS500DC2-T2A-B	Fig. A	137.5	112.5	0.62
	0.1 kW	GYS101DC2-T2A-B	Fig. B	155.5	130.5	0.72

(Unit: mm)



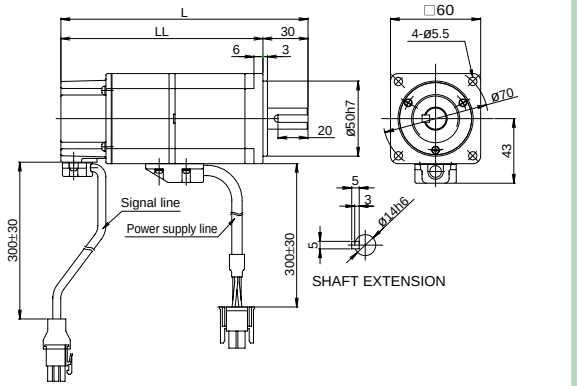
Rated speed	Rated output	Type	Overall length	Dimension (flange)	Mass [kg]
			L	LL	
3000 [r/min]	0.2 kW	GYS201DC2-T2A	126.5	96.5	1.2
	0.4 kW	GYS401DC2-T2A	154.5	124.5	1.8

(Unit: mm)



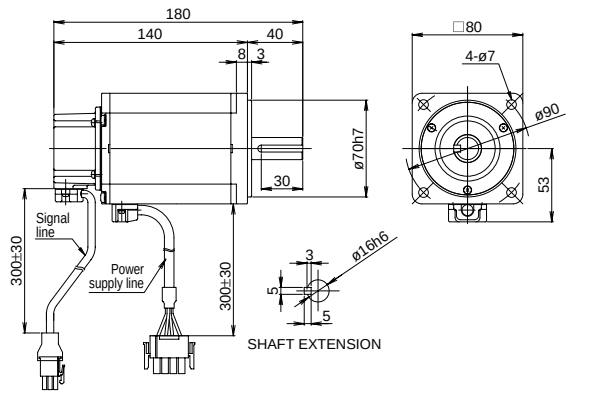
Rated speed	Rated output	Type	Overall length	Dimension (flange)	Mass [kg]
			L	LL	
3000 [r/min]	0.2 kW	GYS201DC2-T2A-B	164.5	134.5	1.7
	0.4 kW	GYS401DC2-T2A-B	192.5	162.5	2.3

(Unit: mm)



Rated speed	Rated output	Type
3000 [r/min]	0.75 kW	GYS751DC2-T2A

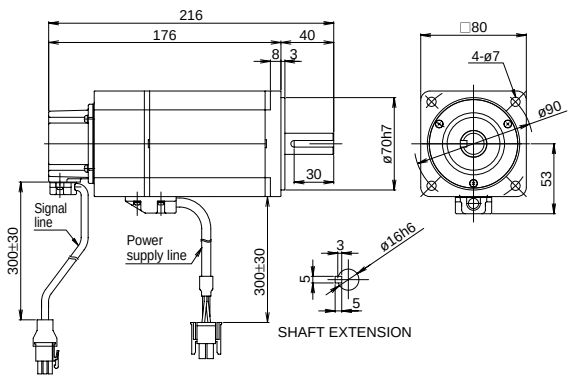
(Unit: mm)



Mass: 3.4 [kg]

Rated speed	Rated output	Type
3000 [r/min]	0.75 kW	GYS751DC2-T2A-B

(Unit: mm)



Mass: 4.2 [kg]

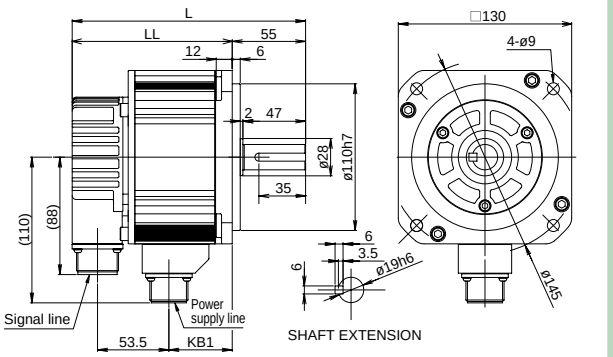
External Dimensions [Servomotor]

Middle inertia series (GYG motor) 2000 r/min, 1500 r/min

Standard type

Rated speed	Rated output	Type	Overall length	Dimension (flange)	Terminal	Mass [kg]
			L	LL	KB1	
2000 [r/min]	0.5 kW	GYG501CC2-T2E	175	120	47.5	5.3
	0.75 kW	GYG751CC2-T2E	187.5	132.5	60	6.4

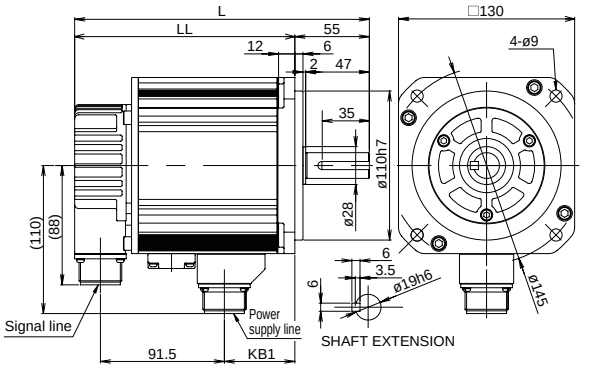
(Unit: mm)



Motor with a brake

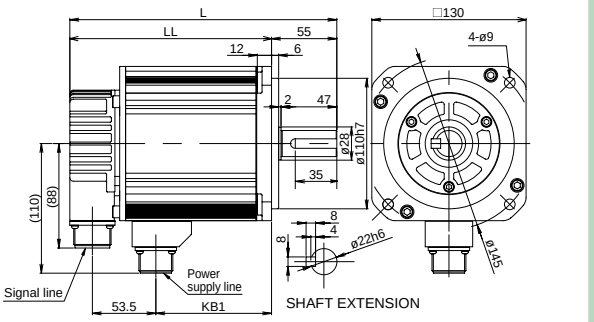
Rated speed	Rated output	Type	Overall length	Dimension (flange)	Terminal	Mass [kg]
			L	LL	KB1	
2000 [r/min]	0.5 kW	GYG501CC2-T2E-B	217.5	162.5	52	7.5
	0.75 kW	GYG751CC2-T2E-B	230	175	64.5	8.6

(Unit: mm)



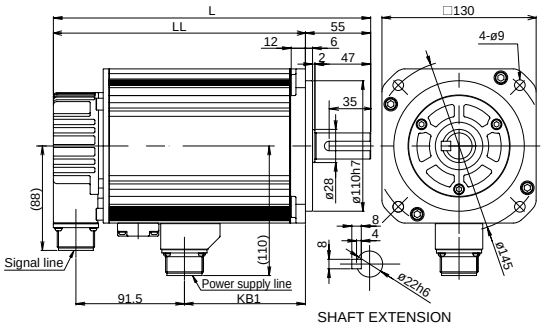
Rated speed	Rated output	Type	Overall length	Dimension (flange)	Terminal	Mass [kg]
			L	LL	KB1	
2000 [r/min]	1 kW	GYG102CC2-T2E	200	145	72.5	7.5
	1.5 kW	GYG152CC2-T2E	225	170	97.5	9.8
	2 kW	GYG202CC2-T2E	250	195	122.5	12

(Unit: mm)



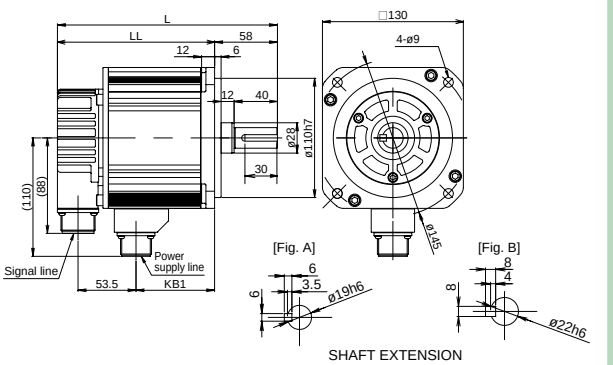
Rated speed	Rated output	Type	Overall length	Dimension (flange)	Terminal	Mass [kg]
			L	LL	KB1	
2000 [r/min]	1 kW	GYG102CC2-T2E-B	242.5	187.5	77	9.7
	1.5 kW	GYG152CC2-T2E-B	267.5	212.5	102	12
	2 kW	GYG202CC2-T2E-B	292.5	237.5	127	14.2

(Unit: mm)



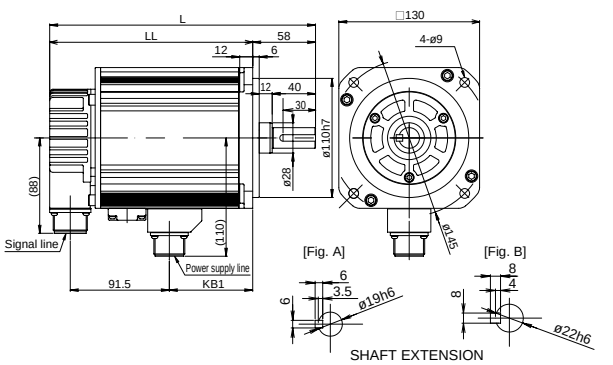
Rated speed	Rated output	Type	Shaft end shape	Overall length	Dimension (flange)	Terminal	Mass [kg]
				L	LL	KB1	
1500 [r/min]	0.5 kW	GYG501BC2-T2E	Fig. A	190.5	132.5	60	6.4
	0.85 kW	GYG851BC2-T2E	Fig. A	203	145	72.5	7.5
	1.3 kW	GYG132BC2-T2E	Fig. B	228	170	97.5	9.8

(Unit: mm)



Rated speed	Rated output	Type	Shaft end shape	Overall length	Dimension (flange)	Terminal	Mass [kg]
				L	LL	KB1	
1500 [r/min]	0.5 kW	GYG501BC2-T2E-B	Fig. A	233	175	64.5	8.6
	0.85 kW	GYG851BC2-T2E-B	Fig. A	245.5	187.5	77	9.7
	1.3 kW	GYG132BC2-T2E-B	Fig. B	270.5	212.5	102	12

(Unit: mm)



Specifications [Servo Amplifier]

Basic specifications

Applicable motor rated speed			3000 [r/min]					2000 [r/min]					1500 [r/min]		
Applicable motor output			0.05 kW	0.1 kW	0.2 kW	0.4 kW	0.75 kW	0.5 kW	0.75 kW	1 kW	1.5 kW	2 kW	0.5 kW	0.85 kW	1.3 kW
Type RYC□□□		**D3-VVT2**	500	101	201	401	751								
		C3-VVT2						501	751	102	152	202			
		B3-VVT2											501	851	132
Outer frame number			Frame 1				Frame 2	Frame 2			Frame 3		Frame 2		Frame 3
Mass			1.0 [kg]				1.5 [kg]				2.5 [kg]		1.5 [kg]		2.5 [kg]
Power supply	**Main power supply**	**Phase**	Single-phase				Single-phase, 3-phase			3-phase			Single-phase, 3-phase	3-phase	
		Voltage frequency	AC200 to 230 [V] -15 [%] to +10 [%] (-10 [%] to +10 [%] at Single-phase) 50/60 [Hz]												
	Control power supply	**Phase**	Single-phase												
		Voltage frequency	AC200 to 230 [V] -15 [%] to +10 [%] 50/60 [Hz]												
Control system			IGBT PWM sinusoidal PWM drive												
Feedback			17-bit incremental encoder												
Functions, input/output signals	**Sequence input (CONT1 to 5)**		(1) Servo ON, (2) +over-travel, (3) -over-travel, (4) emergency stop, (5) P-action, (6) free run command, (7) anti-resonant frequency selection 1, (8) anti-resonant frequency selection 2, (9) control mode switching, (10) external regenerative resistor overheat, (11) alarm reset These functions can be assigned to sequence inputs CONT1 to CONT5 and used. (*1)												
	Sequence output (OUT1 to 4)		(1) Servo ready, (2) positioning complete, (3) servo alarm detection a-contact, (4) servo alarm detection b-contact, (5) dynamic braking control, (6) over-travel detection, (7) emergency stop detection, (8) deviation zero, (9) speed zero, (10) current limit detection, (11) brake timing These functions can be assigned to sequence outputs OUT1 to OUT4 and used.												
	Encoder signal dividing output	**Dividing setting**	Pulse output setting 16 to 32768 (pulses/rev)												
		Signal form	(1) Line driver output A-phase, B-phase, and Z-phase, (2) open collector output Z-phase												
	Monitor output		Analog voltage output for signal measurement (alternating, pulsating) × 2 (1) Speed command, (2) speed return, (3) torque command, (4) positional deviation, (5) positional deviation expansion, (6) pulse command frequency These functions can be assigned to monitor outputs MON1 and MON2 and used, and the output voltage scale and offset can be set by setting parameters.												
	Position control	**Max. command pulse frequency**	Pulse frequency (max.) command input 1 [MHz] (differential), 200 [kHz] (open collector), dividing output 500 [kHz] (differential)												
		Input pulse signal form	Compatible with two systems: (1) RS-422 line driver signals and (2) open collector signals												
		Input pulse type	Selectable from (1) command pulse/command sign, (2) forward operation/reverse operation pulse, and (3) two 90° phase-different signals												
		Command pulse correction	Position pulse = command pulse × $\frac{\text{command pulse correction } \alpha \text{ (1 to 32767)}}{\text{command pulse correction } \beta \text{ (1 to 32767)}}$ Four types of command pulse correction α can be set, and constant switching operation is available.												
		Position control input	(1) Command pulse correction α selection 1, (2) command pulse correction α selection 2, (3) deviation clear, (4) command pulse disabled These functions can be assigned to sequence inputs CONT1 to CONT5 and used. (*1)												
	Speed control	**Speed control range**	1:5000												
		Acceleration/deceleration time setting	0 to 10 [s]/2000 [r/min], acceleration and deceleration times can be set separately, two acceleration times and deceleration times can be set, S-curve acceleration/deceleration is possible.												
		External speed command input	Speed control by analog voltage commands, ±10 V input, the voltage-speed scale and offset can be set by setting parameters.												
		Internal speed setting	Three speeds can be set by setting internal parameters.												
		Speed control input	(1) Multi-speed selection 1, (2) multi-speed selection 2, (3) forward operation, (4) reverse operation, (5) acceleration/deceleration time selection These functions can be assigned to sequence inputs CONT1 to CONT5 and used. (*1)												
	Torque control	**External torque command input**	Speed control by analog voltage commands, ±10 V input, the voltage-torque scale and offset can be set by setting parameters.												
		Torque control input	(1) Forward operation and (2) reverse operation can be assigned to sequence inputs CONT1 to CONT5 and used. (*1)												
	Regenerative braking		Regenerative braking to DC intermediate circuit, the regenerative resistor can be externally installed.												
	Additional functions		Zero clamp function, vibration suppressing control, notch filter, easy tuning, brake timing output, etc.												
Protection			Overcurrent (OC1, OC2), overspeed (OS), overvoltage (Hv), encoder error (Et), control power error (Ct), memory error (dE), regenerative transistor overheat (rH2), encoder communication error (EC), CONT duplication (Cnt), overload (OL), insufficient voltage (LV), regenerative resistor overheat (rH1), excessive deviation (OF), amplifier overheat (AH)												
Working conditions	**Installation place**		For indoor use at max. altitude of 1,000 m or below. The installation place shall be free from dust, corrosive gas, or direct sunlight. To meet European standards: Pollution degree = 2, overvoltage category = III												
	Temperature/humidity		-10 [°C] to 55 [°C]/10 to 90 [%RH] (without condensation)												
	Vibration/shock resistance		4.9 [m/s²]/19.6 [m/s²]												
Standards			Conforming to UL/cUL (UL508c) and CE Mark (low voltage directive EN50178)												

*1: Functions you want to keep ON at all times can be used without wiring (up to four functions can be set by setting parameters as normally ON signals).

Interface specifications

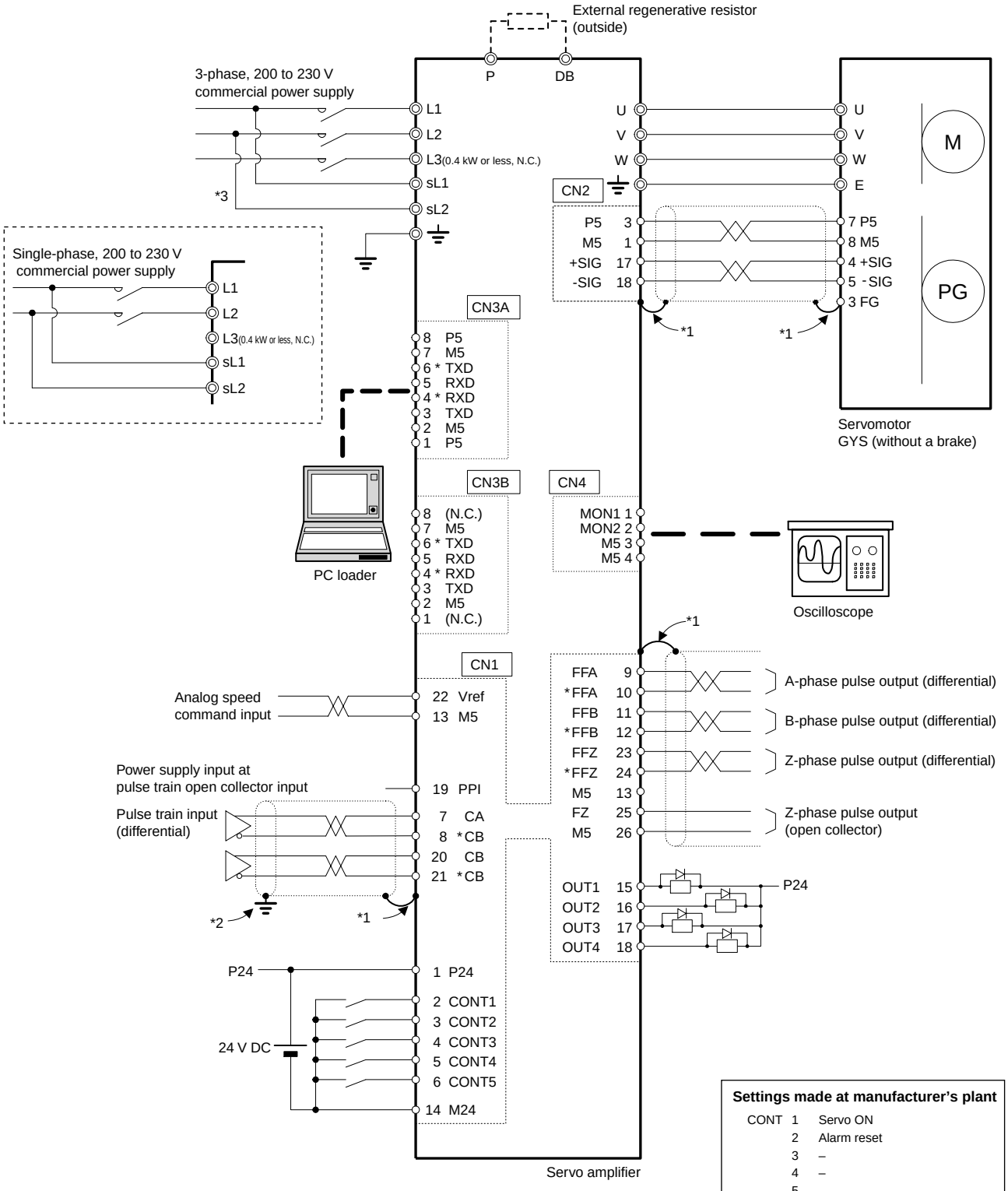
I/O signal specifications

Terminal name	Code	Specification
Pulse train input	CA, *CA CB, *CB	Pulse train form Selectable from (1) command pulse/command code, (2) forward operation pulse/reverse operation pulse, and (3) two 90° phase-different signals.
	PPI	Drive power supply input during open collector input (+24 V DC)
Frequency dividing output	FFA, *FFA FFB, *FFB	Differential output, two 90° phase-different signal output Set output pulses: 16 to 32768 [pulse/rev]
	FFZ, *FFZ	Differential output 1 [pulse/rev]
	FZ, M5	Open collector output 1 [pulse/rev]
Analog input	Vref	Speed control and torque control analog command input ±10 V (input impedance: 20 kΩ)
Power input for sequence signals	P24 M24	+24 V DC for sequence signals is input from outside. 300 mA power is required as an external power supply.
Sequence input signal	CONT1 to CONT5	Each terminal is ON when connected to M24, and OFF when disconnected. +24 V DC/10 mA (per point). The terminals can be assigned to each function by setting parameters.
Sequence output signal	OUT1 to OUT4	ON while connected to the M24 terminal. 30 V DC/50 mA (max.). The terminals can be assigned to each function by setting parameters.
Monitor output 1, monitor output 2	MON1, MON2	Analog voltage output for signal measurement (alternating, pulsating) Selectable from (1) speed command, (2) speed return, (3) torque command, (4) positional deviation, (5) positional deviation expansion, and (6) pulse command frequency.

Communication specifications

Item	Specification
Interface	Two RS-485 ports
Synchronization system	Start-stop synchronization
Transmission system	Four-wire type duplex
Baud rate	9600, 19200, 38400 [bps]
Max. number of axes	31 axes

Connection Diagram (Reference)



*1: Connect the shielded lines of CN1 and CN2 to the connector shell. Ground the connector shell.

*2: Ground both ends of each shielded line.
(Connector amplifier side end to the connector shell, and the pulse generator side end to FG (earth).)

*3: Connect the control power supplies (sL1, sL2) as necessary.

Settings made at manufacturer's plant

CONT	1	Servo ON
	2	Alarm reset
	3	–
	4	–
	5	–
OUT	1	Servo ready
	2	Positioning complete
	3	Servo alarm detection b-contact
	4	–

CAUTION

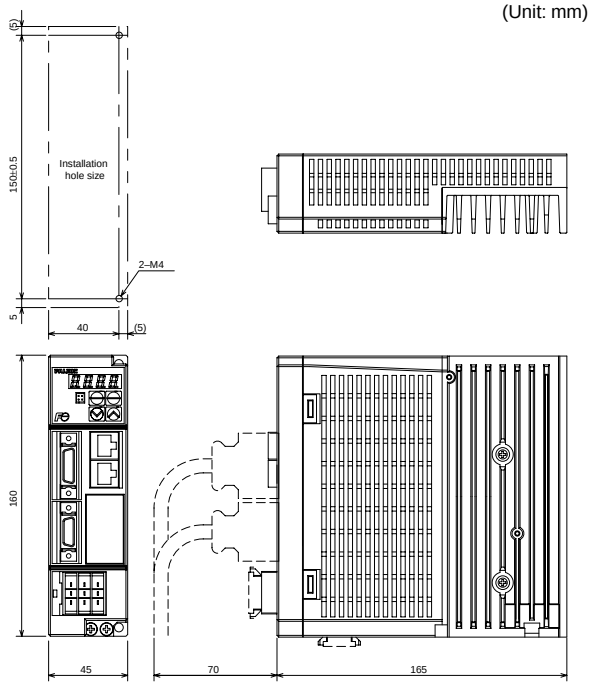
The diagram shown above is given as a reference for model selection. When actually using the selected servo system, make wiring connections according to the connection diagram and instructions described in the user's manual.

External Dimensions [Servo Amplifier]

Frame 1

Rated speed	Applicable motor output	Type
3000 [r/min]	0.05 kW	RYC500D3-VVT2
	0.1 kW	RYC101D3-VVT2
	0.2 kW	RYC201D3-VVT2
	0.4 kW	RYC401D3-VVT2

(Unit: mm)

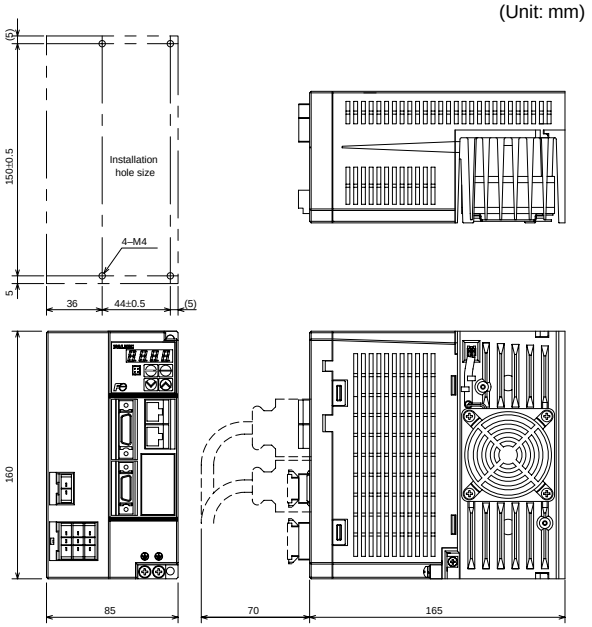


Mass: 1.0 [kg]

Frame 2

Rated speed	Applicable motor output	Type
3000 [r/min]	0.75 kW	RYC751D3-VVT2
2000 [r/min]	0.5 kW	RYC501C3-VVT2
	0.75 kW	RYC751C3-VVT2
	1 kW	RYC102C3-VVT2
1500 [r/min]	0.5 kW	RYC501B3-VVT2
	0.85 kW	RYC851B3-VVT2

(Unit: mm)

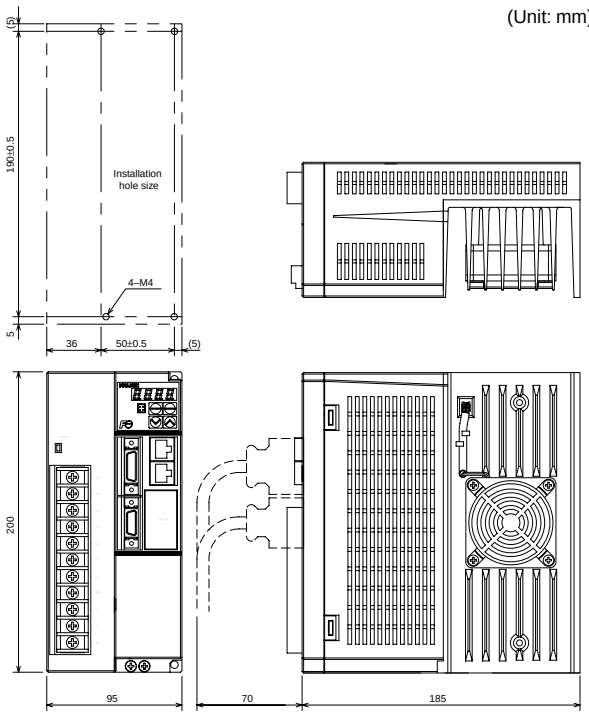


Mass: 1.5 [kg]

Frame 3

Rated speed	Applicable motor output	Type
2000 [r/min]	1.5 kW	RYC152C3-VVT2
	2 kW	RYC202C3-VVT2
1500 [r/min]	1.3 kW	RYC132B3-VVT2

(Unit: mm)



Mass: 2.5 [kg]

Model Code List

Servomotor

Specification						Type
Rated speed	Encoder	Winding insulation class (*1)	Oil seal/shaft	Brake	Rated output	
3000 r/min	17-bit INC	IP67	Without an oil seal, with a key (*2)	Without a brake	0.05 kW	GYS500DC2-T2A
					0.1 kW	GYS101DC2-T2A
					0.2 kW	GYS201DC2-T2A
					0.4 kW	GYS401DC2-T2A
					0.75 kW	GYS751DC2-T2A
				With a brake	0.05 kW	GYS500DC2-T2A-B
					0.1 kW	GYS101DC2-T2A-B
					0.2 kW	GYS201DC2-T2A-B
					0.4 kW	GYS401DC2-T2A-B
					0.75 kW	GYS751DC2-T2A-B
2000 r/min	17-bit INC	IP67	With an oil seal and a key (*3)	Without a brake	0.5 kW	GYG501CC2-T2E
					0.75 kW	GYG751CC2-T2E
					1 kW	GYG102CC2-T2E
					1.5 kW	GYG152CC2-T2E
					2 kW	GYG202CC2-T2E
				With a brake	0.5 kW	GYG501CC2-T2E-B
					0.75 kW	GYG751CC2-T2E-B
					1 kW	GYG102CC2-T2E-B
					1.5 kW	GYG152CC2-T2E-B
					2 kW	GYG202CC2-T2E-B
1500 r/min	17-bit INC	IP67	With an oil seal and a key (*3)	Without a brake	0.5 kW	GYG501BC2-T2E
					0.85 kW	GYG851BC2-T2E
					1.3 kW	GYG132BC2-T2E
				With a brake	0.5 kW	GYG501BC2-T2E-B
					0.85 kW	GYG851BC2-T2E-B
					1.3 kW	GYG132BC2-T2E-B

*1: Excluding the shaft sealing and connectors of the GYS motor, and the shaft sealing of the GYG motor.
*2: Servomotors (1) without an oil seal and a key, (2) with an oil seal and without a key, and (3) with an oil seal and a key are made-to-order.
*3: Servomotors (1) without an oil seal and a key, (2) with an oil seal and without a key, and (3) without an oil seal and with a key are made-to-order.

Servo amplifier

Specification			Type
Input power supply	Applicable motor	Applicable motor output	
Single-phase 200 to 230 V	Low inertia series (GYS motor) 3000 r/min	For 0.05 kW	RYC500D3-VVT2
		For 0.1 kW	RYC101D3-VVT2
		For 0.2 kW	RYC201D3-VVT2
		For 0.4 kW	RYC401D3-VVT2
Single-phase or 3-phase 200 to 230 V		For 0.75 kW	RYC751D3-VVT2
	Middle inertia series (GYG motor) 2000 r/min	For 0.5 kW	RYC501C3-VVT2
		For 0.75 kW	RYC751C3-VVT2
3-phase 200 to 230 V		For 1 kW	RYC102C3-VVT2
		For 1.5 kW	RYC152C3-VVT2
		For 2 kW	RYC202C3-VVT2
Single-phase or 3-phase 200 to 230 V	Middle inertia series (GYG motor) 1500 r/min	For 0.5 kW	RYC501B3-VVT2
3-phase 200 to 230 V		For 0.85 kW	RYC851B3-VVT2
		For 1.3 kW	RYC132B3-VVT2

Model Code List

Options

Cables with connectors

Name	Specification		Applicable model (*1) (A)	(B)	(C)	(D)	(E)	(F)	Type
Cable for sequence input/output (for connection between host controller and amplifier)	3 m	Single-connector	●	●	●	●	●	●	WSC-D26P03
Power cable for power supply wiring	3 m	Single-connector	●	●	●	●			WSC-S03P03-B
Cable for encoder (for connection between amplifier and motor)	5 m	Double-connector	●	●					WSC-P06P05-D
	10 m								WSC-P06P10-D
	20 m								WSC-P06P20-D
	5 m	Double-connector			●	●	●	●	WSC-P06P05-CD
	10 m								WSC-P06P10-CD
	20 m								WSC-P06P20-CD
Power cable for motor (for connection between amplifier and motor)	5 m	Double-connector	●						WSC-M04P05-B
	10 m								WSC-M04P10-B
	20 m								WSC-M04P20-B
	5 m	Double-connector		●					WSC-M06P05-B
	10 m								WSC-M06P10-B
	20 m								WSC-M06P20-B
	5 m	Single-connector			● (*2)	● (*3)			WSC-M04P05-WD
	10 m								WSC-M04P10-WD
	20 m								WSC-M04P20-WD

*1: For applicable models, see Table 1: Applicable models below.

*2: Use the cable together with the connector for motor power supply wiring WSK-M04P-CA.

*3: Use the cable together with the connector for motor power supply wiring WSK-M06P-CA. (The customer is requested to make a cable for brakes.)

Connectors

*When the customer makes a cable, use any of the connectors shown in this table.

Name		Specification	Applicable model (*1) (A)	(B)	(C)	(D)	(E)	(F)	Type
Connector for sequence input/output wiring		Half pitch connector, soldered type, 26-pin × 1 set	●	●	●	●	●	●	WSK-D26P
Connector for power supply wiring		Dynamic connector , X key, 3-pin × 1 set	●	●	●	●			WSK-S03P-B
Connector for encoder wiring	**Amplifier side**	Half pitch connector, soldered type, 20-pin × 1 set	●	●	●	●	●	●	WSK-D20P
	Motor side	MATE-N-LOCK connector, 9-pin × 1 set	●	●					WSK-P09P-D
		Cannon plug (angle), 6-pin × 1 set			●	●	●	●	WSK-P06P-C
Connector for motor power supply wiring	**Amplifier side**	Dynamic connector, Y key, 3-pin × 1 set	●	●	●	●			WSK-M03P-B
	Motor side	MATE-N-LOCK connector, 4-pin × 1 set	●						WSK-M04P
		MATE-N-LOCK connector, 6-pin × 1 set		●					WSK-M06P
		Cannon plug (angle), 4-pin × 1 set			●		●		WSK-M04P-CA
		Cannon plug (angle), 6-pin × 1 set				●		●	WSK-M06P-CA

*1: For applicable models, see Table 1: Applicable models below.

Common options

Name		Specification		Type
Connector for control power supply wiring		Dynamic connector, X key, 2-pin × 1 set		WSK-L02P-D
For personal computer loader connection	**Conversion adapter**	RS-232C–RS-485 conversion	Both a converter and a cable are required.	NW0H-CNV
	Cable	Both-end RJ45 connector, straight connection, 2 m		WSC-PCL
External regenerative resistor		0.4 kW or less	Connector for external regenerative resistor: Use it with WSK-R03P-B.	WSR-401
		0.5 kW to 1 kW		WSR-152
		1.3 kW to 2 kW	–	DB11-2
Connector for external regenerative resistor		Common to applicable models A to D (*1), dynamic connector, 3-pin, X key (with insertion error preventive key) × 1 set		WSK-R03P-B

*1: For applicable models, see Table 1: Applicable models below.

[Table 1: Applicable models]

Motor specification: Rated speed	Brake	Rated output	Motor type	Applicable amplifier type	Applicable model group
3000 r/min	Without a brake	0.05 kW	GYS500DC2-T2A	RYC500D3-VVT2	(A)
		0.1 kW	GYS101DC2-T2A	RYC101D3-VVT2	
		0.2 kW	GYS201DC2-T2A	RYC201D3-VVT2	
		0.4 kW	GYS401DC2-T2A	RYC401D3-VVT2	
		0.75 kW	GYS751DC2-T2A	RYC751D3-VVT2	
	With a brake	0.05 kW	GYS500DC2-T2A-B	RYC500D3-VVT2	(B)
		0.1 kW	GYS101DC2-T2A-B	RYC101D3-VVT2	
		0.2 kW	GYS201DC2-T2A-B	RYC201D3-VVT2	
		0.4 kW	GYS401DC2-T2A-B	RYC401D3-VVT2	
		0.75 kW	GYS751DC2-T2A-B	RYC751D3-VVT2	
2000 r/min	Without a brake	0.5 kW	GYG501CC2-T2E	RYC501C3-VVT2	(C)
		0.75 kW	GYG751CC2-T2E	RYC751C3-VVT2	
		1 kW	GYG102CC2-T2E	RYC102C3-VVT2	
		1.5 kW	GYG152CC2-T2E	RYC152C3-VVT2	(E)
		2 kW	GYG202CC2-T2E	RYC202C3-VVT2	

Motor specification: Rated speed	Brake	Rated output	Motor type	Applicable amplifier type	Applicable model group
2000 r/min	With a brake	0.5 kW	GYG501CC2-T2E-B	RYC501C3-VVT2	(D)
		0.75 kW	GYG751CC2-T2E-B	RYC751C3-VVT2	
		1 kW	GYG102CC2-T2E-B	RYC102C3-VVT2	
		1.5 kW	GYG152CC2-T2E-B	RYC152C3-VVT2	(F)
		2 kW	GYG202CC2-T2E-B	RYC202C3-VVT2	
1500 r/min	Without a brake	0.5 kW	GYG501BC2-T2E	RYC501B3-VVT2	(C)
		0.85 kW	GYG851BC2-T2E	RYC851B3-VVT2	
		1.3 kW	GYG132BC2-T2E	RYC132B3-VVT2	(E)
	With a brake	0.5 kW	GYG501BC2-T2E-B	RYC501B3-VVT2	(D)
		0.85 kW	GYG851BC2-T2E-B	RYC851B3-VVT2	
		1.3 kW	GYG132BC2-T2E-B	RYC132B3-VVT2	(F)

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