

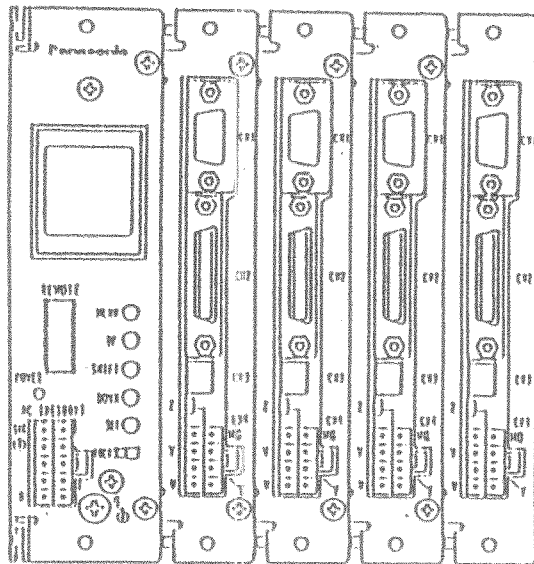
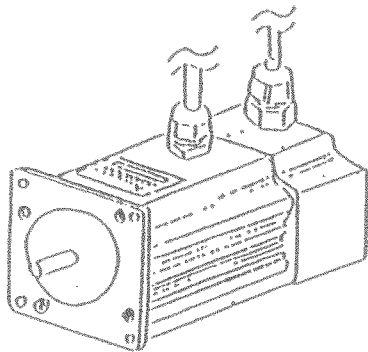
WITH STATIONARY CONTROL

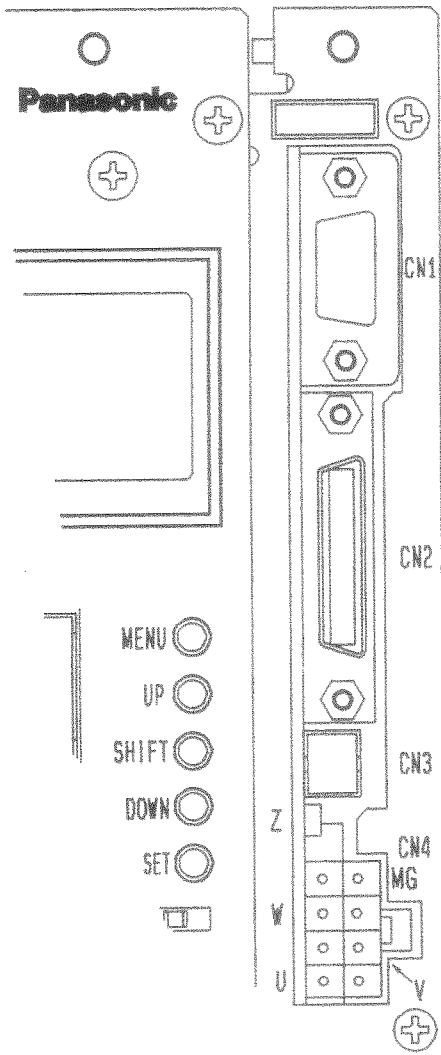
PANASONIC AC SERVO MOTOR • DRIVER

PULSE ORDER /
SELF - CONTAINED POWER SUPPLY

KF SERIES

Technical Material





CN1 [ENCORDER CONNECTOR]

PIN No.	TERMINAL NAME	PIN No.	TERMINAL NAME
1	GND	9	A phase
2	A phase sin(sin wave)	10	\bar{A} phase
3	+5V	11	Z phase
4	Absolute U	12	\bar{Z} phase
5	Absolute V	13	B phase
6	Absolute W	14	\bar{B} phase
7	B phase sin(sin wave)	15	Seild
8	N. C		

CN3 [MONITOR CONNECTOR]

NO	TERMINAL NAME	NUMBER
1	Speed order pulse F/V output	$\pm 1V/50kpps (- ; CW)$
	Speed feedback F/V output	$\pm 2V/1000rpm*(- ; CW)$
	Torque monitor output	$\pm 2V/Rating*(+ ; CW)$
	Declination counter D/A output	$\pm 6.3mV/Pulse*(+ ; CW)$
3	Encoder sin wave output	$1Vp-p+DC 1.5V$
4	Positioning complete signal (coin signal)	TTL level
5	Encoder Z phase signal output	TTL level
6	GND	

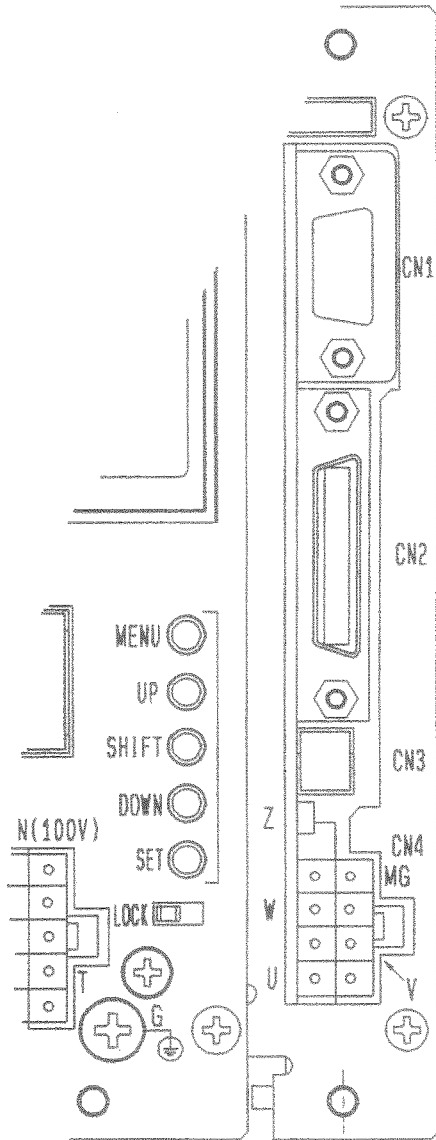
* () direction is based on NORM setting of DIRSW.
However, the poles are changed except torque monitor output at REV.

Other party connector

- [CN1] Contact : JK - SP2140
Housing : KEC - 15P
Cover : JK - SC15A, J - SC9B
(made by Japan terminal)
- [CN3] Contact : PS - SLA - C2 - 1 - 100
Housing : PS - 6SLA - D4C2
(made by Japan terminal)

*Cable for relaying CN1 connector and connector CN3 are option.
If you have any question, please do not hesitate to contact us.

CN2 [CONTROL UNIT/INPUT CONNECTOR]



PIN No.	TERMINAL NAME	PIN No.	TERMINAL NAME
1	S. GND	19	Pulse prohibition input (PC insulation)
2	A Phase Signal Output (O. C)	20	Deviation counter clear input (PC insulation)
3	+5V	21	P. Mode Input (PC insulation)
4	S. GND	22	P-OT input (PC insulation)
5	B Phase Signal Output (O. C)	23	N-OT input (PC insulation)
6	+5V	24	Alarm reset input (PC insulation)
7	S. GND	25	Control mode input 0 (PC insulation)
8	Z Phase Signal Output (O. C)	26	Control mode input 1 (PC insulation)
9	+5V	27	S. GND
10	User side S. GND	28	N. C
11	Servo ready output (PC insulation)	29	Speed operation input
12	Overflow output (PC insulation)	30	Torque operation input
13	Servo alarm output (PC insulation)	31	CW pulse input (μ A9637ACPS9)
14	Positioning complete signal output	32	CW pulse input (μ A9637ACPS9)
15	S. GND	33	CCW pulse input (μ A9637ACPS9)
16	N. C	34	CCW pulse input (μ A9637ACPS9)
17	PC power supply input (5~24V)	35	+5V
18	Servo on input (PC insulation)	36	S. GND

S. GND : Signal GND, F. GND : Frame GND

Other side connector

- [CN2] Connector : PCR-S36FS
Bracket : PCR-LS36LA (Honda Tsushin Kogyo)
- [CN4] Plague : 5557-8R
Terminal : 5556T (L) (Japan Molex)
- [AC IN] Plague : 5557-10R
Terminal : 5556T (L) (Japan Molex)

AC IN Connector

No	Terminal	No	Terminal
1	R	6	—
2	—	7	T
3	R	8	—
4	—	9	T
5	SAG	10	—

CN4

No	Motor terminal	Color/Lead wire	No	Motor terminal	Color/Lead wire
1	U phase	Red	5	—	—
2	—	—	6	V phase	White
3	W phase	Blue	7	—	—
4	—	—	8	F. G	Green

*Connect AC IN connector into 1-3, 7-9 due to capacity. It is capable to supply CN4 cable/CN2 connector or customers demand. Please prepare AC IN connector for yourself. And if you any questions, please ask us directly.

Function of connector terminal

(In/out put of connector2 and its application)

Input Signal

Signal	CN2 Pin Code		Content
Photo - Coupler Power Supply Input	17	5V~24V	Outside power supply for CN2 : 18, 19, 20, 21, 22, 23, 24, 25, 26 pin.
<u>Servo On</u> Input	18	Servo On	Inputting low level signal, it release base block & dynamic brake and get waiting pulse operation input.
<u>Pulse Prohibition</u>	19	Prohibit Operation Pulse	Prohibit pulse operation at low level. No receive even pulse input.
<u>Deviation Counter Clear</u> Input	20	Deviation Counter Clear	Preventing pulse operation and encoder feed back pulse, make deviation counter clear. Deviation counter clear at level.
<u>P Mode</u> Input	21	Low Gain Operation	Decreasing position loop gain at low level. When low speed ing such as manual operation or etc, it decrease the vibration to be happened.
P - OT N - OT	22 23	Prohibition Of Nrmal Rotation Prohibition Of Reverse Rotation	When straight line drivng, connect limit switch signal with depending on CW/CCW derections. Also set limit switch open when limit switch operating.
<u>Alarm Reset</u> Input	24	Alarm Reset	Resetting servo alarm at low level.

 Active High not marlied above the signal.
 Active Low marlied above the signal.

Notes • CW/CCW is the rotation direction wiew from load side. (shaft side)

Function of connector terminal

(In/out put of connector2 and its application)

Input Signal

CN2PIN Code	Signal	Content															
25 26	Control Mode Change Over Input	<table border="1"> <thead> <tr> <th colspan="2"></th> <th colspan="2">MODEO</th> </tr> <tr> <th colspan="2"></th> <th>L</th> <th>H</th> </tr> </thead> <tbody> <tr> <th rowspan="2">MODE1</th> <th>L</th> <td>Voltage operation</td> <td>Voltage operation</td> </tr> <tr> <th>H</th> <td>Torque operation</td> <td>Pulse operation</td> </tr> </tbody> </table>			MODEO				L	H	MODE1	L	Voltage operation	Voltage operation	H	Torque operation	Pulse operation
		MODEO															
		L	H														
MODE1	L	Voltage operation	Voltage operation														
	H	Torque operation	Pulse operation														
29	Speed Operation Input VS	<ul style="list-style-type: none"> • Speed operation input terminal on voltage operation mode. <p>Operation Voltage = $\pm 6.0V \times (\text{rpm}) \div (3000\text{rpm})$ Tolerance $\pm 0.2V$ within (When Rating Rotation) Polarity : CCW rotation at positive voltage (When DIR=NORM set up.) CW rotation at positive voltage (When DIR=REV set up.)</p>															
30	Torque Operation Input VT	<ul style="list-style-type: none"> • Torque operation input terminal on torque operation mode. <p>Output Voltage = $\pm 2.0V \times (\text{Output torque}) \div (\text{Rating torque})$ Tolerance $\pm 10\%$ within (When rating torque) Polarity : CCW rotation at positive voltage (Not concerned with DIR setting up.) CW rotation at negative voltage (Not concerned with DIR setting up.)</p>															

Input Signal

Signal	CN2 Pin Code		Content
Servo Alarm Output	13	Servo Alarm	When something unusual detected, it get output transistor off.
$\overline{\text{Overflow}}$ Output	12	Overflow Detection	When stand pulse at deviation counter gets higher than the setting value, it get output transistor ON.
$\overline{\text{Positioning Complete}}$ signal	14	Positioning Complete	When stand pulse at deviation counter gets within the setting value ($0 \sim \pm 15$), it get output transistor ON.
$\overline{\text{Servo Ready}}$ Output	11	Servo Ready	It gets output transistor ON under the condition that there not happen alarm at main circuit power supply ON.
A Phase Output B Phase Output Z Phase Output	22 5 8	A Phase B Phase Z Phase	It outputs encoder incremental signal pulse as open collector (TI : SN74LS07 or equivalent).

Notes

- There could happen pulse range change with depending on magnetic pole position/R. P. M. when Z phase output.

Functions of protections

LCD Indication	Protection Function	Content	Standard
OC	Over Current	Over current protection for FET driving output.	$19 \pm 3A$
OH	Over Heat	Over heat protection for FET attached heat sink.	$120 \pm 5^{\circ}C$
OV	Over Voltage	Over voltage protection against too much AC input voltage.	$AC140 \pm 10V$
UV	Low Voltage	Low voltage protection against too less AC input voltage.	$AC45 \pm 10V$
OS	Over Speed	Over speed protection against too high motor rpm.	$4300 \pm 200rpm$
OL	Over Load	Over load protection against too much motor current	1.2 times of motor rating voltage $\pm 10\%$ *1 (When continuous driving for 60 seconds)
OF	Over Flow	It takes action when stand pulse at deviation counter gets higher than setting value.	Possible to set up 1k/4k/8k/64k.
ENC	Encoder Cut Off	Protection against encoder cable cut off.	When encoder cable cut off except ASIN/BSIN.
SPU	CPU Error	Protection against micro-computer run-away.	_____
SUM	E PROM Error	Protection against E ² PROM data destruction/data reading error.	_____

*1 : It operates at 0.67 times of motor rating current when rpm is less than 5 rpm.
Therefore, be careful to choose the motor when it is torque control mode.