

KNC-PKS-FD144S-10 - Servo System



FEATURES

- **24-70VDC**
- **Rated Torque of 450 oz-in**
- **Power Ratings up to 1000 Watts**
- **Maximum Speed of 4100 RPM**
- **Magnetolectric Encoder (DSU) or 2500 PPR Incremental Encoder (DSH)**
- **IP65 for Body, IP54 Shaft Seal**
- **Brake Option Available**
- **Position, Speed, and Torque Control**



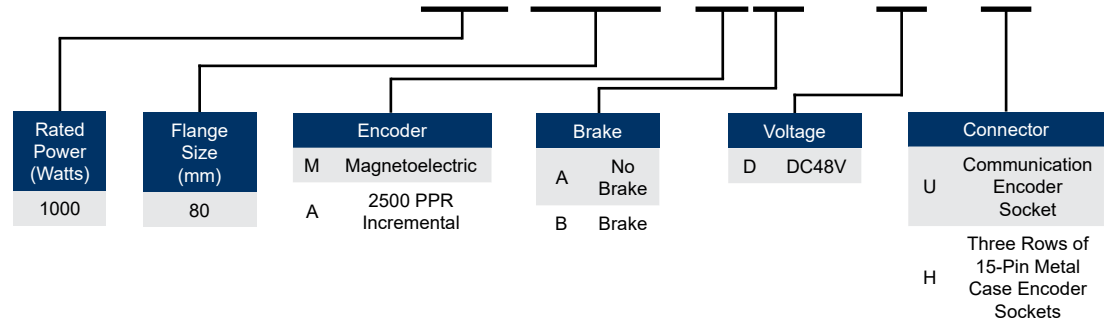
DESCRIPTION

The KNC-PKS-FD144S-10 Servo System includes a 1000 Watt Servo Motor or Servo Motor with brake, operated by the KNC-SRV-FD144S-LB-000 Servo Drive. These packages are ideal and provide easy start-ups, convenience, and performance. The Servo Motors included in these packages provide torque up to 450 oz-in. The KNC-SRV-FD144S-LB-000 Servo Drive is designed to switch dynamically among different control methods for more flexible operation and can operate position control mode either with pulse and direction inputs, 8 internal position points, or 8 internal speed points. Each system includes a 5m Motor Power Cable, 5m Encoder Cable and a Communication cable. If purchasing the option with a Brake then a 5m Brake Cable will be included as well.

Item	Rated Voltage (VDC)	Rated Speed (RPM)	Rated Torque (oz-in)	Rated Current (Arms)	Inertia (oz-in-sec ²)	Torque Constant KT (oz-in/A)	Resistance (ohms)	Inductance (mH)	Brake (24VDC)	Motor Length (mm)	Shaft Diameter (mm)
KNC-PKS-FD144S-10-80S-MAK-DSU	24-70	3000	450	26.4	0.01996	17.6	0.047	0.2	No	122.7 ± 1.5	19
KNC-PKS-FD144S-10-80S-MBK-DSU	24-70	3000	450	26.4	0.01996	17.6	0.047	0.2	Yes	157 ± 1.5	19
KNC-PKS-FD144S-10-80S-AAK-DSH	24-70	3000	450	26.4	0.01996	17.6	0.047	0.2	No	122.7 ± 1.5	19
KNC-PKS-FD144S-10-80S-ABK-DSH	24-70	3000	450	26.4	0.01996	17.6	0.047	0.2	Yes	157 ± 1.5	19

ORDERING INFORMATION

KNC-PKS-FD144S-10-80S-MAK-DSU



L011926

KNC-SRV-SMC80S-0100-30MxK-5DSU KNC-SRV-SMC80S-0100-30AxK-5DSH Servo Motor



FEATURES

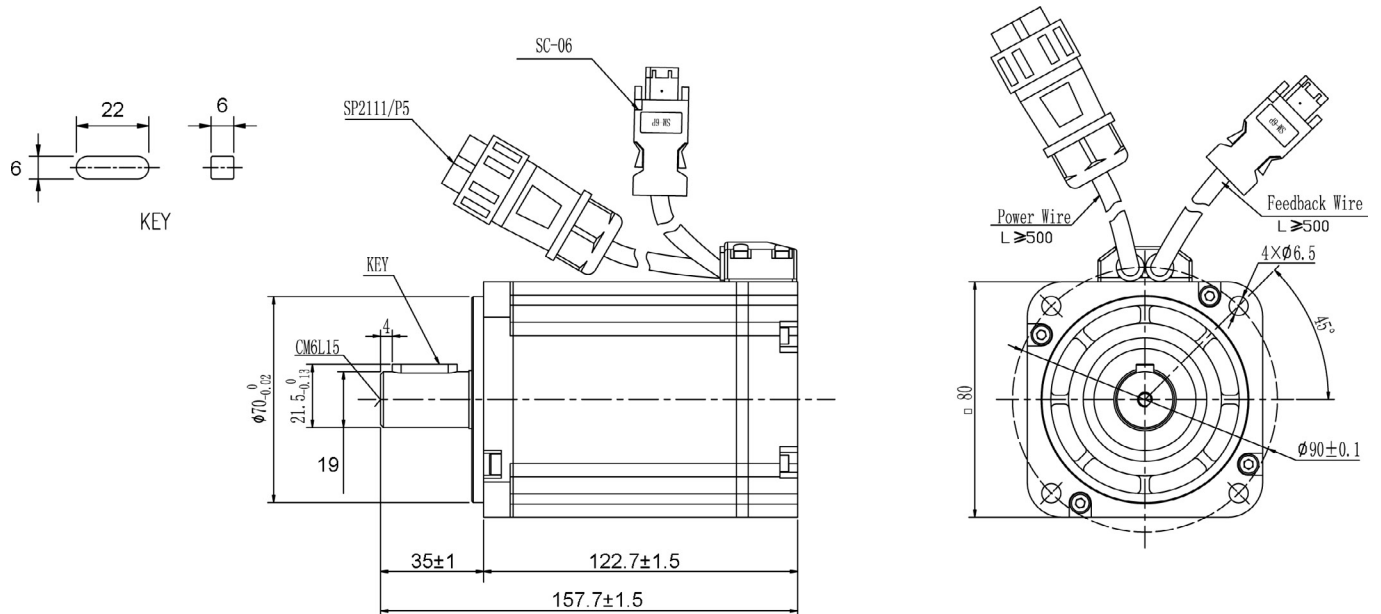
- 24-70VDC
- 1000W Power Rating
- Rated Torque of 450 oz-in
- Maximum Speed of 4200 RPM
- Magnetoelectric Encoder (DSU) or 2500 PPR Incremental Encoder (DSH)
- IP65 for Body, IP54 Shaft Seal
- Insulation Class F



SPECS

Item	Rated Torque (oz-in)	Rated Power (Watts)	Rated Speed (rpm)	Rated Current (Arms)	Inertia (oz-in-sec ²)	Torque Constant KT (oz-in/A)	Resistance (ohms)	Inductance (mH)	Length (mm)	Weight (lbs)
KNC-SRV-SMC80S-0100-30MAK-5DSU	450	1000	3000	26.4	0.01996	17.6	0.047	0.2	122.7 ± 1.5	6.17
KNC-SRV-SMC80S-0100-30MBK-5DSU	450	1000	3000	26.4	0.01996	17.6	0.047	0.2	157 ± 1.5	7.27
KNC-SRV-SMC80S-0100-30AAK-5DSH	450	1000	3000	26.4	0.01996	17.6	0.047	0.2	122.7 ± 1.5	6.17
KNC-SRV-SMC80S-0100-30ABK-5DSH	450	1000	3000	26.4	0.01996	17.6	0.047	0.2	157 ± 1.5	7.27

KNC-SRV-SMC80S-0100-30MAK-5DSU & KNC-SRV-SMC80S-0100-30AAK-5DSH



Dimensions are in mm

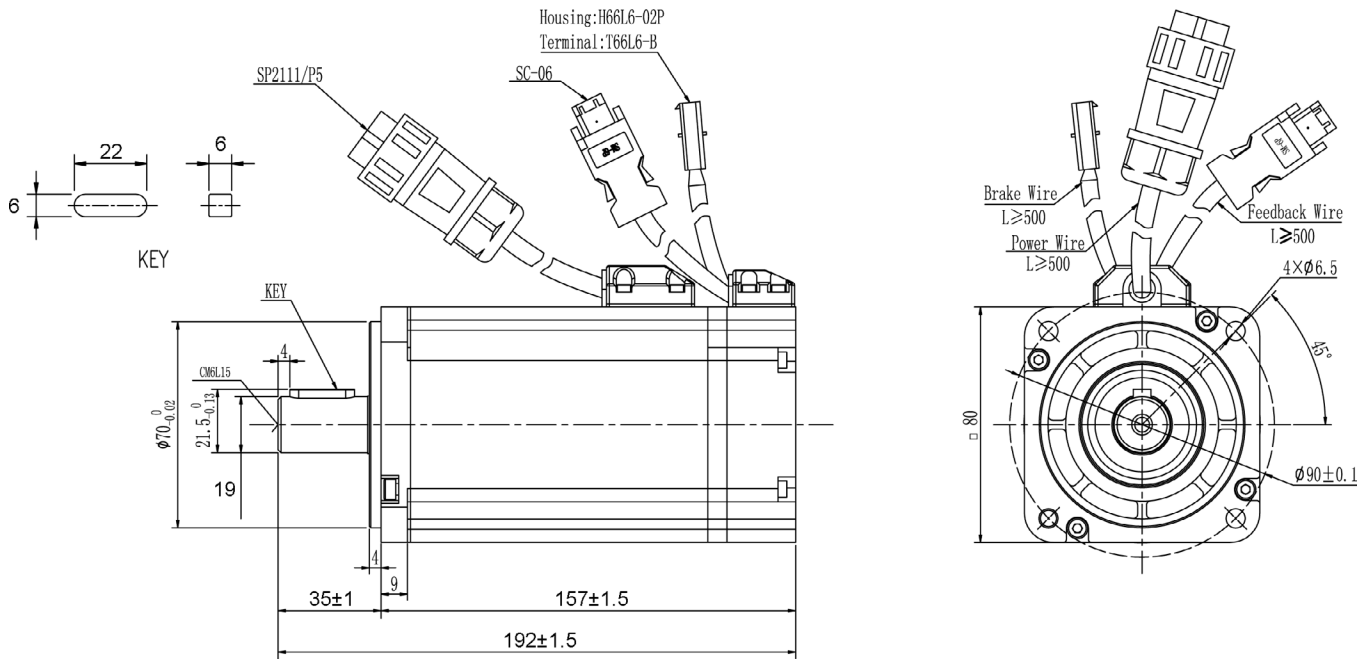
DIMENSIONS

KNC-SRV-SMC80S-0100-30MxK-5DSU KNC-SRV-SMC80S-0100-30AxK-5DSH Servo Motor



DIMENSIONS

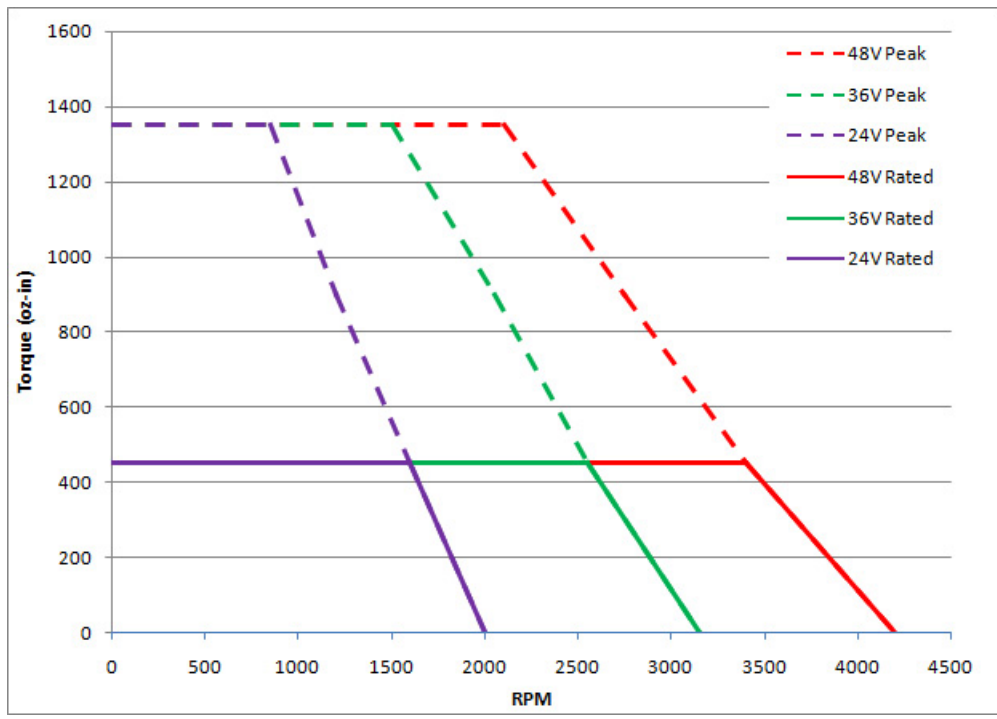
KNC-SRV-SMC80S-0100-30MBK-5DSU & KNC-SRV-SMC80S-0100-30ABK-5DSH (Brake Option)



Dimensions are in mm

TORQUE CURVE

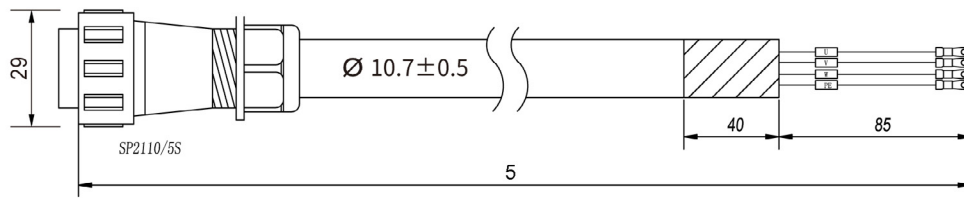
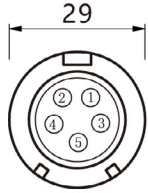
KNC-SRV-SMC80S-0100-30MAK-5DSU, KNC-SRV-SMC80S-0100-30AAK-5DSH,
KNC-SRV-SMC80S-0100-30MBK-5DSU & KNC-SRV-SMC80S-0100-30ABK-5DSH



KNC-SRV-SMC80S-0100-30MxK-5DSU KNC-SRV-SMC80S-0100-30AxK-5DSH Servo Motor

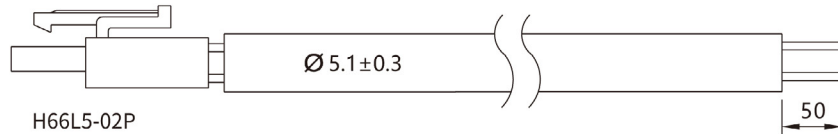
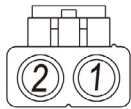


Motor Cable: KNC-SRV-MOTF-030-05-KL-SP for KNC-SRV-SMC80S-0100-30MAK-5DSU,
KNC-SRV-SMC80S-0100-30AAK-5DSH, KNC-SRV-SMC80S-0100-30MBK-5DSU
& KNC-SRV-SMC80S-0100-30ABK-5DSH



KNC-SRV-MOTF-030-05-KL-SP		
Color	Signal	5PIN Air Insertion
Yellow	U	PIN1
Red	V	PIN2
Black	W	PIN3
Yellow Green + Shielding	PE+Shielding	PIN4
NC	NC	PIN5

Brake Cable: KNC-SRV-BRA-05-KL for KNC-SRV-SMC80S-0100-30MBK-5DSU &
KNC-SRV-SMC80S-0100-30ABK-5DSH



KNC-SRV-BRA-05-KL		
Cable Color	Signal	2PIN terminal
Red	Brake +	PIN 1
Blue	Brake -	PIN 2

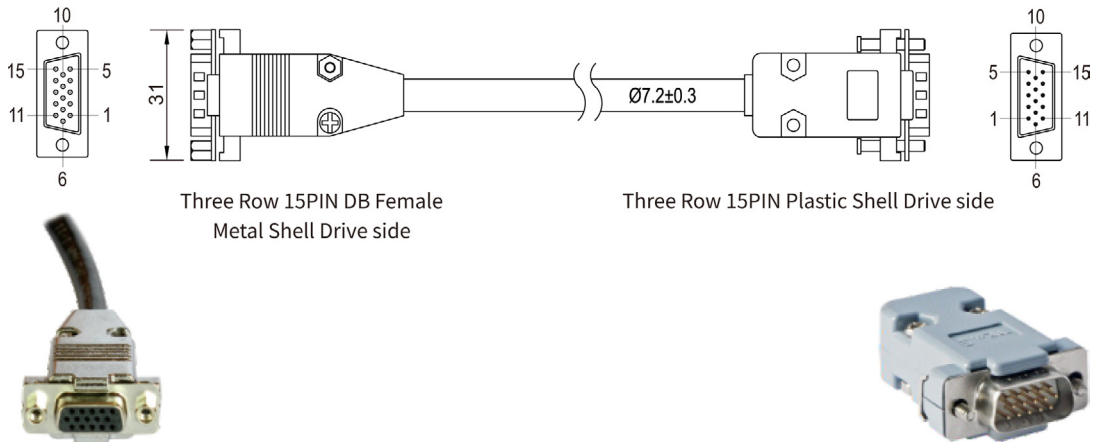
Communication Cable: KNC-SRV-RS-232-RJ45 for KNC-SRV-SMC80S-0100-30MAK-5DSU,
KNC-SRV-SMC80S-0100-30AAK-5DSH, KNC-SRV-SMC80S-0100-30MBK-5DSU
& KNC-SRV-SMC80S-0100-30ABK-5DSH



KNC-SRV-RS-232-RJ45							
SIDE-A	2	3	4	5	6	7	8
SIDE-B	3	6	7	4	5	2	8

WIRING PINOUTS

Encoder Cable: KNC-SRV-ENCHA-05-KH for KNC-SRV-SMC80S-0100-30AAK-5DSH & KNC-SRV-SMC80S-0100-30ABK-5DSH



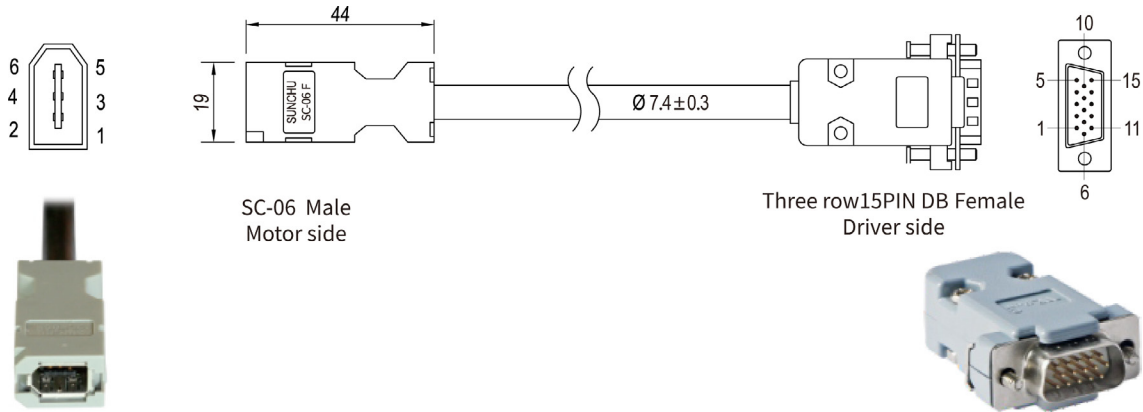
KNC-SRV-ENCHA-05-KH			
Three Rows of 15PIN DB Female	Three Rows of 15PIN DB Male	Signal	Color
PIN1	PIN1	+5V	Red (Thick)
PIN8	PIN8	A	Orange
PIN7	PIN7	B	Yellow
PIN6	PIN6	Z	Green
PIN4	PIN4	U	Brown
PIN10	PIN10	V	Purple
PIN9	PIN9	W	Blue
PIN2	PIN2	GND	Black (Thick)
PIN13	PIN13	/A	Orange White
PIN12	PIN12	/B	Yellow White
PIN11	PIN11	/Z	Green White
PIN5	PIN5	/U	Brown White
PIN15	PIN15	/V	Purple White
PIN14	PIN14	/W	Blue White
Shell	Shell	Shielded	Shielded Wire

KNC-SRV-SMC80S-0100-30MxK-5DSU KNC-SRV-SMC80S-0100-30AxK-5DSH Servo Motor



WIRING PINOUTS

Encoder Cable: KNC-SRV-ENCHG-05-GU for KNC-SRV-SMC80S-0100-30MAK-5DSU & KNC-SRV-SMC80S-0100-30MBK-5DSU



KNC-SRV-ENCHG-05-GU				
Wiring Cable	Color	Signal 1	Signal 2	DB15
PIN 1	Red	VDD	VDD	PIN1
PIN 2	Black	GND	GND	PIN2
PIN 3	Brown	MA_P+	\	PIN10
PIN 4	Blue	MA_N-	\	PIN15
PIN 5	Yellow	SLO_P+	SD	PIN9
PIN 6	Green	SLO_N-	/SD	PIN14
SHELL	SHIELD	SHIELD	SHIELD	SHELL

SPECIFICATIONS

Model	Motor Cable	Encoder Cable	Brake Cable
KNC-SRV-SMC80S-0100-30MAK-5DSU	KNC-SRV-MOTF-030-05-KL-SP	KNC-SRV-ENCHG-05-GU	-
KNC-SRV-SMC80S-0100-30MBK-5DSU		KNC-SRV-BRA-05-KL	
KNC-SRV-SMC80S-0100-30AAK-5DSH		-	
KNC-SRV-SMC80S-0100-30ABK-5DSH		KNC-SRV-BRA-05-KL	

Model	KNC-SRV-SMC80S-0100-30MAK-5DSU KNC-SRV-SMC80S-0100-30MBK-5DSU KNC-SRV-SMC80S-0100-30AAK-5DSH KNC-SRV-SMC80S-0100-30ABK-5DSH		
Length of Motor L(mm)	122.7 ± 1.5 157 ± 1.5 (with brake)		
Cooling Method	Totally Enclosed, Non-Ventilated		
Protection Level	IP65 for Body, Shaft Sealing IP54		
Environmental Conditions of Operation	Temperature	-20°C~40°C (Non-freezing)	
	Humidity	Below 90% RH (Non-condensing)	
	Ambient Environment	Away from active gas, combustible gas, oil drops and dust	
	Altitude	Maximum Altitude 4000m, Rated Power at 1000m or Below, Above 1000m: Decreasing 1.5% per 100m Rise	

KNC-SRV-FD144S Series Servo Driver



FEATURES

- 24-70VDC
- Rated Current is 30A (RMS), Peak Current is 120A
- 1200-1500 Watt Rated Power Range
- Position, Speed, and Torque Control
- RS232 and RS485 Port
- Natural Air Cooling
- MODBUS RTU or Pulse and Direction
- Supports Incremental or 16-Bit Absolute Encoders
- Communication Software
 - Configure Parameters
 - I/O Signal Monitoring
 - Speed and Position Curves
 - Gain Adjustments
- Programmable Inputs and Outputs
 - 3 Inputs
 - 2 Outputs (1 Standard & 1 for Brake)
- CE Certified



DESCRIPTION

The KNC-SRV-FD144S-LB-000 Series Servo Drive is a great fit for applications requiring position, speed, and/or torque control methods. The uniqueness of this Servo Drive is the flexibility of using a single Servo Drive that can accommodate motors with power rating range of 1200-1500W. Also, it is designed to switch dynamically among different control methods for more flexible operation. The KNC-SRV-FD144S-LB-000 Servo Drive can operate position control mode either with pulse and direction inputs, 8 internal position points, or 8 internal speed points. The KNC-SRV-FD144S-LB-000 Servo Drive operates with a 24-70VDC input. These drives come standard with an RS232 which can be operated using MODBUS Protocol, and RS485, or can be operated using our Free, Easy-to-Use Software. To communicate to the drives, the KNC-SRV-RS-232-RJ45 Cable is required. Please consult our Application Engineers for more information.

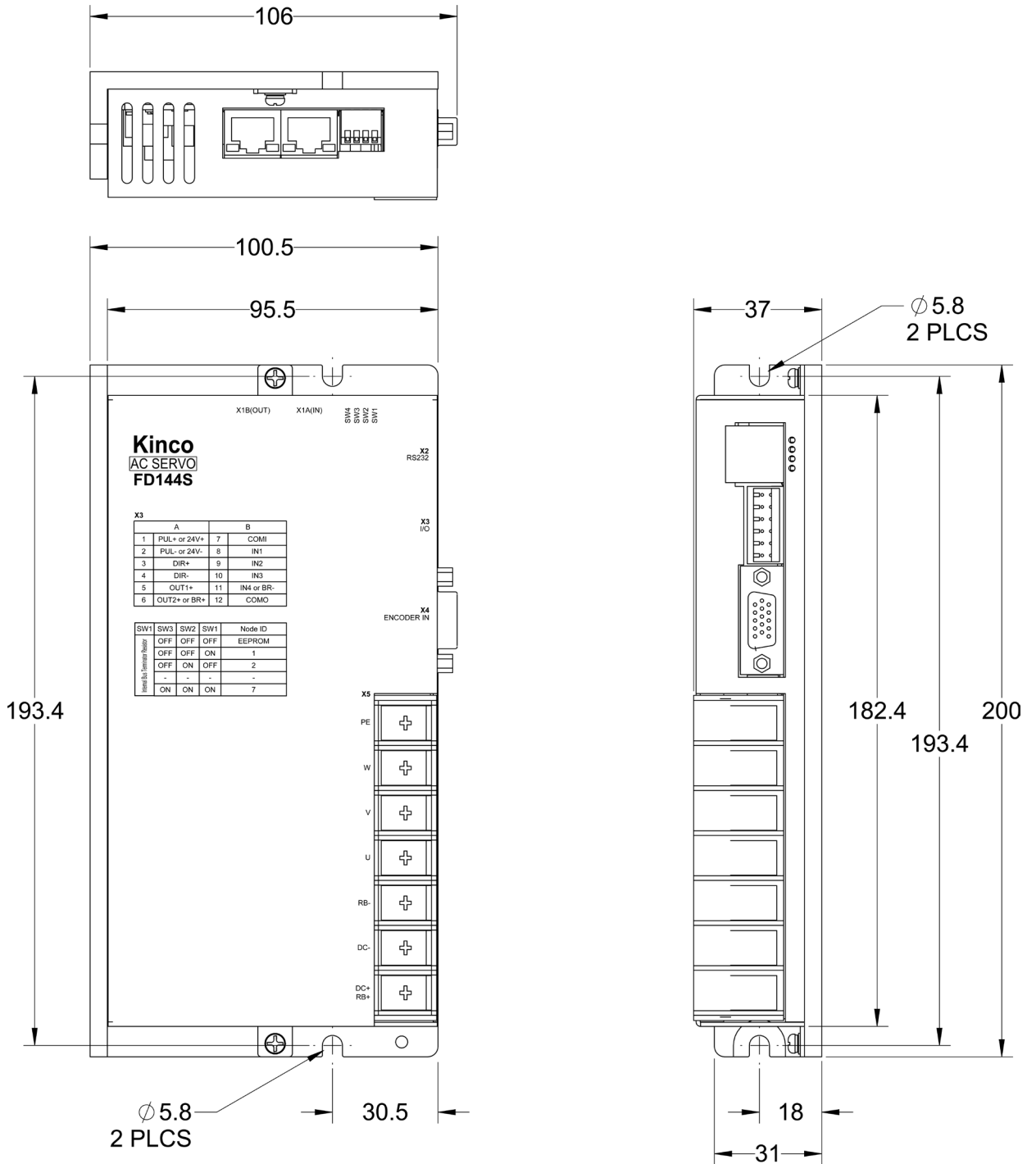
SPECIFICATIONS

Category	Servo Driver	Servo Motor	Description	Power/Brake Cable	Encoder Cable	Rated Power / Rated Speed / Rated Torque
Small Inertia DC48V	FD144S-LB-000	SMC80S-0100-30MAK-5DSU	Magnetolectric Encoder	MOTF-030-05-KL-SP	ENCHG-05-GU	1000W / 3000 RPM / 450 oz-in
		SMC80S-0100-30MBK-5DSU	Magnetolectric Encoder with Brake	MOTF-030-05-KL-SP / BRA-05-KL	ENCHG-05-GU	1000W / 3000 RPM / 450 oz-in
		SMC80S-0100-30AAK-5DSH	2500 P/R Incremental Encoder HFO Connector	MOTF-030-05-KL-SP / BRA-05-KL	ENCHG-05-KH	1000W / 3000 RPM / 450 oz-in
		SMC80S-0100-30ABK-5DSH	2500 P/R Incremental Encoder HFO Connector	MOTF-030-05-KL-SP / BRA-05-KL	ENCHG-05-KH	1000W / 3000 RPM / 450 oz-in

KNC-SRV-FD144S Series Servo Driver



DIMENSIONS



Note: All Dimensions in (mm)

KNC-SRV-FD144S Series Servo Driver



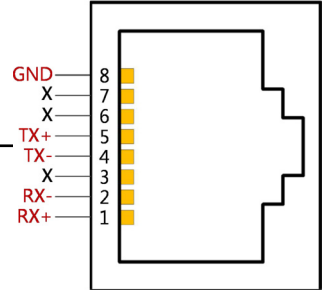
INTERFACE DESCRIPTION

RS485 Port

PIN Number	Signal
8	GND
7	NC
6	NC
5	TX+
4	TX-
3	NC
2	RX-
1	RX+

RS485 Bus Communication Port

X1

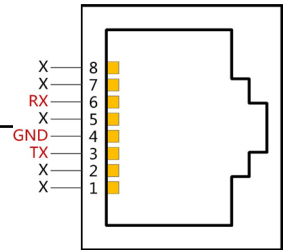


RS232 Port

PIN Number	Signal
3	TX
4	GND
6	RX
Others	NC

RS232 Communication Interface, Can be Used for Debugging and Import/Export Project Data Via PC

X2



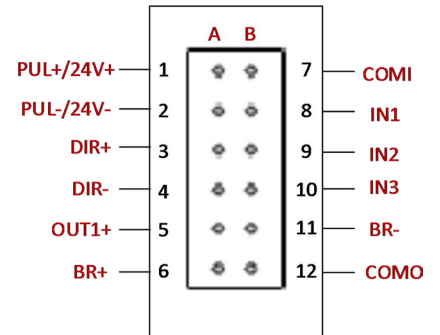
External Input & Output

PIN No.	Signal	PIN No.	Signal
1	PUL+	7	COMI
2	PUL-	8	IN1
3	DIR+	9	IN2
4	DIR-	10	IN3
5	OUT1+	11	IN4 / BR-
6	OUT2+ / BR+	12	COMO

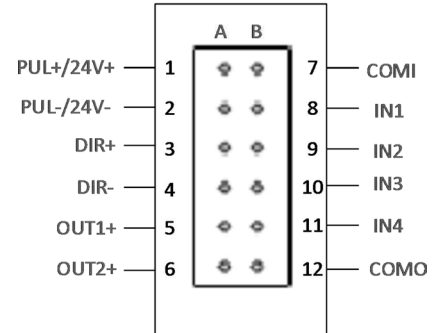
Digital Input/Output Terminals

X3

FD1X4S-□B-000



FD1X4S-□A-000



KNC-SRV-FD144S Series Servo Driver



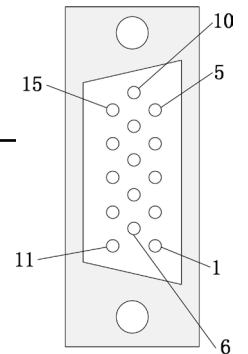
INTERFACE DESCRIPTION

Motor with Incremental Encoder

PIN No.	Signal	PIN No.	Signal
1	GND	9	5V+
2	/A	10	A
3	/B	11	B
4	/Z	12	Z
5	/U	13	U
6	/V	14	V
7	/W	15	W
8	PE	16	-

Motor Encoder Input
Interface

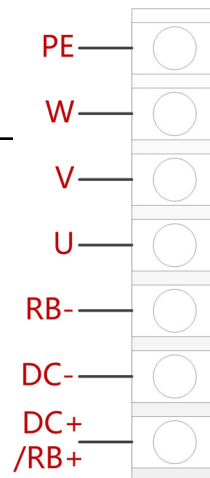
X4



Motor/Power Supply

PIN Name	PIN Function
PE	Servo Motor UVW phase out and motor ground
W	
V	
U	
RB-	External brake resistor input
DC-	Driver power input negative
DC+ / RB+	Driver power input positive
RB+	External brake resistor input

X5



KNC-SRV-FD144S Series Servo Driver



TECHNICAL SPECIFICATIONS

Model Parameter		KNC-SRV-FD144S Series
Power	Main Supply Voltage	24VDC-70VDC
	Control Circuit Voltage	DC24V 1A (Optional)
Current	Rated Current (RMS)	30Arms (40Arms with External Heatsink)
	Peak Current (PEAK)	120A
Feedback Signal		5V Incremental Differential Encoder 16-Bit Single-Turn Magnetic Encoder
Brake Chopper		Via Wiring an External Braking Resistor (Mainly in Quick Start and Stop Application). Brake Chopper Threshold is 73V (Adjustable via Software)
Brake Chopper Threshold		DC73V \pm 2V (Default Value, Adjustable via Software)
Over-Voltage Alarming Threshold		DC83V \pm 2V
Under-Voltage Alarming Threshold		18V \pm 2V
Cooling Method		Natural Air Cooling Note: External Heatsink is Required when the Rated Current of FD124S, FD134S and FD144S Should be Bigger than 12Arms, 20Arms and 30Arms Respectively. The Size of External Heatsink is 300mm*300mm*10mm in Length*Width*Height
Weight		2.4 lbs
Digital Input	Input Specification	3 Digital Inputs, with COM1 Terminal for PNP (High Level Valid 12.5-30V) or NPN (Low Level Valid 0-5V) Connection, Suitable to FD1x4S-LB-000
	Input Function	Define Freely According to Requirement, Supporting Following Functions: Driver Enable, Driver Fault Reset, Driver Mode Control, Speed Loop Proportional Control, Positive Limit, Negative Limit, Homing Signal, Reverse Command, Internal Speed Section Control, Internal Positive Section Control, Quick Stop, Start Homing, Active Command, Switch Electronic Gear Ratio, Switch Gain.
Digital Output	Output Specification	1 - Way Digital Output without 1 Driving Capacity of 100 ma or (BR+/BR-) can Directly Drive the Standard Brake Motor for FD1x4S-LB-000, Please Refer to the Wiring Port for Details.
	Pulse Direction Output	Pulse + Direction, CCW+CW, Phase A+Phase B (5V~24V) Note, only FD1x4-Lx-000 Support this Function
	Output Function	Define Freely According to Requirement, Supporting Following Functions: Driver Ready, Driver Fault, Position Reached, Motor at Zero Speed, Motor Brake, Motor Speed Reached, Z Signal, Maximum Speed Obtained in Torque Mode, Motor Brake, Position Limiting, Reference Found.
	RS232	Default Baudrate Setting is 38400, the Max. Baudrate is 115.2KHz, use Kinco Software to Communicate with PC, or via Free Protocol to Communicate with Controller.
	Protection Function	Over-Voltage Protection, Under-Voltage Protection, Motor Over-Heat Protection (I ² T), Short-Circuit Protection, Drive Over-Heat Protection, Etc.
Modbus / RS485		The Max. Baudrate is 115.2KHz, use Modbus RTU Protocol to Communicate with Controller.

Compatible Drivers

Part Number	Description
KNC-SRV-FD144S-LB-000	Servo Driver (Brake version)



Compatible Motors

Part Number	Description
KNC-SRV-SMC80S-0100-30MAK-5DSU	Servo Motor
KNC-SRV-SMC80S-0100-30MBK-5DSU	Servo Motor



Compatible Cables

Part Number	Description
KNC-SRV-MOTF-030-05-KL-SP	Power Cable
KNC-SRV-ENCHG-05-GU	Encoder Cable
KNC-SRV-ENCHA-05-KH	Encoder Cable
KNC-SRV-BRA-05-KL	Brake Cable
KNC-SRV-RS-232-RJ45	Communication Cable

