

# KNC-SRV-FD413-LA-000 Servo Drive



FEATURES

- **Input Voltage Range From 180-264VAC**
- **200 Watt Power Rating**
- **Position, Speed, and Torque Control**
- **RS232 and RS485**
- **Requires Single-Loop 17-Bit Magnetic Encoder, Single Lap 20-Bit Communication Encoders, or Multi-Turn 16-Bit Communication Type Absolute Encoder**
- **7 Digital Inputs, 5 Digital Outputs**
- **CE Certified**



DESCRIPTION

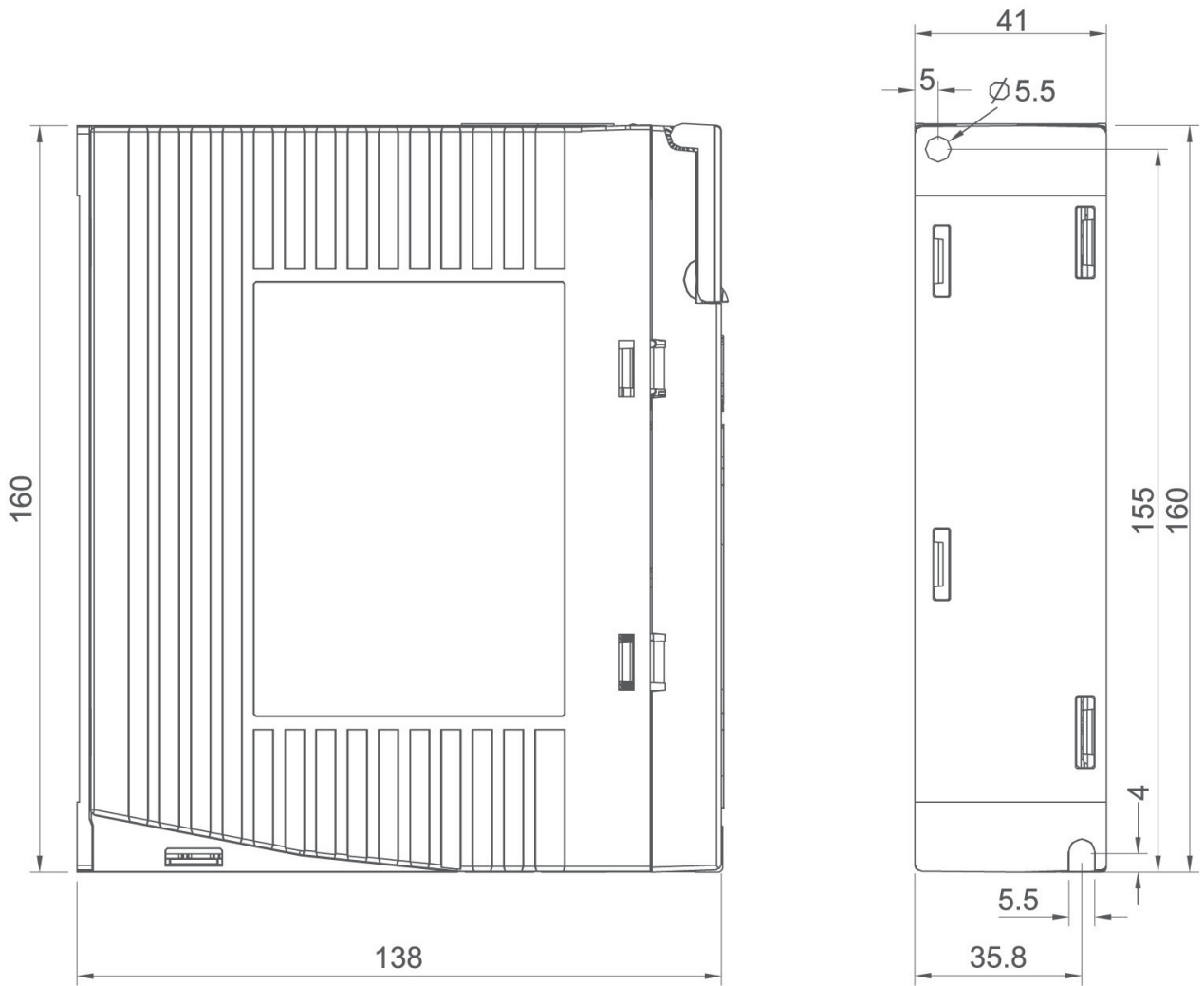
The KNC-SRV-FD413-LA-000 Servo Drive is a great fit for applications requiring position, speed, and/or torque control methods. The uniqueness of this Servo Drive is the flexibility of using a single Servo Drive that can accommodate motors with power ratings range from 50-200W. Also, it is designed to switch dynamically among different control methods for more flexible operation. The KNC-SRV-FD413-LA-000 Servo Drive can operate position control mode either with pulse and direction inputs, or 8 internal position points, analog speed control or 8 internal speed points, and analog or internal torque mode. The KNC-SRV-FD413-LA-000 Servo Drive operates with single phase 180-264VAC input. These drives come standard with RS232 and RS485 communication ports and can be operated using MODBUS Protocols or the Free, Easy-to-Use Software. A CAN BUS is an optional port that is available upon request. Please consult our Application Engineers for more information.

ADDITIONAL INFORMATION

| Servo Driver                        | Servo Motor            | Description                                   | Power/Brake Cable                              | Encoder Cable                                       | Rated Speed/<br>Rated Torque/<br>Rated Current |
|-------------------------------------|------------------------|---|--|---|--|
| <b>KNC - SRV -<br/>FD413-LA-000</b> | SMS60S-0020-30JAK-3LKU | 20 Bit Single-Turn Encoder                    | KNC-SRV-MOT-005-05-KL-Y                        | KNC-SRV-ENCDG-05-GU                                 | 3000rpm/<br>90 oz-in/<br>1.4A                  |
|                                     | SMS60S-0020-30JBK-3LKU | 20 Bit Single-Turn Encoder with Brake         | KNC-SRV-MOT-005-05-KL-Y /<br>KNC-SRV-BRA-05-KL | KNC-SRV-ENCDG-05-GU<br>&<br>KNC-SRV-ENCDG-(4)-GU-BT | 3000rpm/<br>90 oz-in/<br>1.4A                  |
|                                     | SMS60S-0020-30KAK-3LKU | 16 Bit Multi-Turn Absolute Encoder            | KNC-SRV-MOT-005-05-KL-Y                        | KNC-SRV-ENCDG-05-GU<br>&<br>KNC-SRV-ENCDG-(4)-GU-BT | 3000rpm/<br>90 oz-in/<br>1.4A                  |
|                                     | SMS60S-0020-30KBK-3LKU | 16 Bit Multi-Turn Absolute Encoder with Brake | KNC-SRV-MOT-005-05-KL-Y /<br>KNC-SRV-BRA-05-KL | KNC-SRV-ENCDG-05-GU<br>&<br>KNC-SRV-ENCDG-(4)-GU-BT | 3000rpm/<br>90 oz-in /<br>1.4A                 |

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DIMENSIONS



Note: All Dimensions in (mm)

# KNC-SRV-FD413-LA-000 Servo Driver



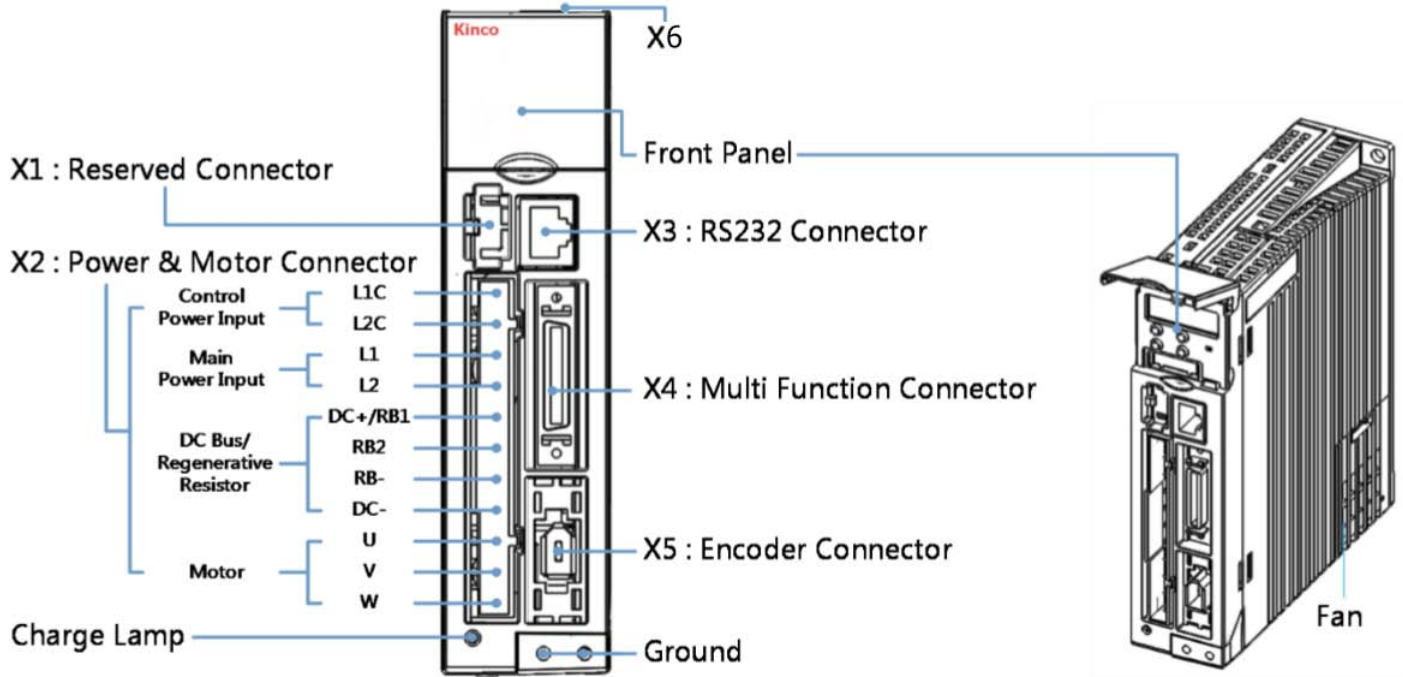
TECHNICAL SPECIFICATIONS

| Model Parameter                  |                                | KNC-SRV-FD413-LA-000 Series   |
|----------------------------------|--------------------------------|---|
| Power                            | Main Supply Voltage            | 200-240VAC $\pm$ 10% 50/60Hz $\pm$ 3Hz 0.5A   |
|                                  | Control Circuit Voltage        | 200-240VAC $\pm$ 10% 50/60Hz $\pm$ 3Hz (750W 5.5A) , (200W 1.5A)  |
| Current                          | Rated Current (RMS)            | 2A  |
|                                  | Peak Current (PEAK)            | 7A  |
| Feedback Signal                  |                                | 17 Bit Single-Turn Magnetolectric Encoder, 16 Bit Multi-Turn Absolute Encoder, 20 Bit Single-Turn Encoder   |
| Brake Chopper                    |                                | Inbuilt 100 Ohm/10W Brake Resistor. When the real power of Brake Resistor is over 10W, please add an external Braking Resistor (mainly in quick start and stop application)   |
| Brake Chopper Threshold          |                                | DC380V $\pm$ 5V   |
| Over-Voltage Alarming Threshold  |                                | DC400V $\pm$ 5V   |
| Under-Voltage Alarming Threshold |                                | DC200V $\pm$ 5V   |
| Cooling Method                   |                                | Natural Air Cooling   |
| Weight                           |                                | 0.8 Kg  |
| Digital Input                    | Input Specification            | 7 Digital Inputs, with COM1 Terminal for PNP (High Level Valid 12.5-30V) or NPN (Low Level Valid 0-5V) connection.  |
|                                  | Input Function                 | Define Freely According to Requirement, Supporting Following Functions: Driver Enable, Driver Fault Reset, Driver Mode Control, 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, Position Table. |
| Digital Output                   | Output Specification           | 5 Digital Outputs, Maximum Voltage DC30V; OUT1 and OUT2 are Differential Outputs, Maximum Current 100mA; OUT3~OUT5 are Normal Outputs, Maximum Current 20mA; OUT2 is also a Brake Control Output Port, via Connecting a Relay to Control the Brake of Motor.  |
|                                  | Output Function                | Define Freely According to Requirement, Supporting Following Functions: Driver Ready, Driver Fault, Positon Reached, Motor at Zero Speed, Motor Brake, Motor Speed Reached, Z Signal, Maximum Speed Obtained in Torque Mode, Motor Brake, Position Limiting, Reference Found, Multi-Position Reached.   |
|                                  | Encoder Signal Output Function | Output 5V A, B, Z Signal of Encoder from the Motor. Adjustable Encoder Resolution, Range: 0-65536. Maximum 2MHz Frequency Output  |
|                                  | RS232                          | The Max. Baudrate is 115.2KHz, use MODBUS RTU Protocol to Communicate with Controller.  |
|                                  | Protection Functions           | Over-Voltage Protection, Under-Voltage Protection, Motor Over-Heat Protection (I <sup>2</sup> T), Short-Circuit Protection, Drive Over-Heat Protection.   |
| RS485                            |                                | The Max. Baudrate is 115.2KHz, use MODBUS RTU Protocol to Communicate with Controller.  |
| Operation Environment            | Operating Temperature          | 0 ~ 40°C  |
|                                  | Storage Temperature            | -10° C ~ 70°C   |
|                                  | Humidity (Non-Condensing)      | Below 90%RH   |
|                                  | Protection Class               | IP20  |
|                                  | Installation Environment       | Installed in a Dust-Free, Dry and Lockable Environment (Such as in a Electrical Cabinet)  |
|                                  | Installation Mode              | Vertical Installation   |
|                                  | Altitude                       | No Power Limitation Below 1000m   |
| Atmospheric Pressure             |                                | 86kpa-106kpa  |

# KNC-SRV-FD413-LA-000 Servo Driver



INTERFACE

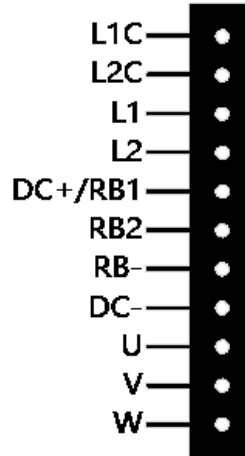


INTERFACE DESCRIPTION

Power Connector (X2)

| PIN Number  | Signal Marks  | Signal                               |
|---|---------------|--------------------------------------|
| 1   | L1C           | Control Power Input L/N              |
| 2   | L2C           | Control Power Input L/N              |
| Single Phase 200-240VAC ±10% 50/60Hz, 0.5A<br>Supply Earthing Systems: TN-S, TN-C, TN-C-S, TT (not corner earthed)  |               |                                      |
| 3   | L1            | Drive Power Input L/N                |
| 4   | L2            | Drive Power Input L/N                |
| Single Phase 200-240VAC ±10%, 50/60Hz<br>750W @7A, 400W @4.5A, 200W @3A, 100W @1.5A<br>Supply Earthing Systems: TN-S, TN-C, TN-C-S, TT (not corner earthed) |               |                                      |
| 5   | DC+/RB1 (DC+) | DC bus+                              |
| 5   | DC+/RB1 (RB1) | External Braking Resistor Input      |
| 6   | RB2           | Internal Braking Resistor Input      |
| 7   | RB-           | External Braking Resistor Input      |
| 8   | DC-           | DC bus-                              |
| 9   | U             | U Phase Power Output for Servo Motor |
| 10  | V             | V Phase Power Output for Servo Motor |
| 11  | W             | W Phase Power Output for Servo Motor |

X2



**Information**

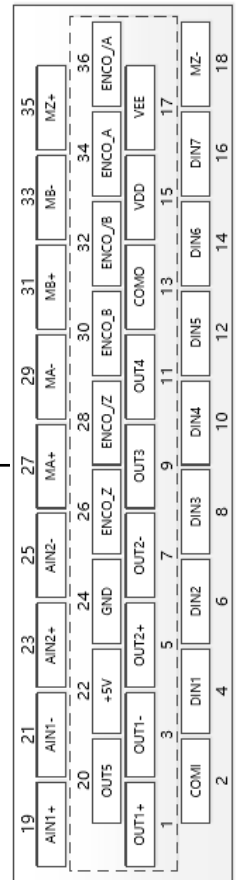
Short Circuit DC+ / RB1 and RB2 if choosing controller internal braking resistor (power: 10W)

**Note**

It is forbidden to use the internal braking resistor if the average brake power is more than 10W

**Multi-Function Connector (X4)**

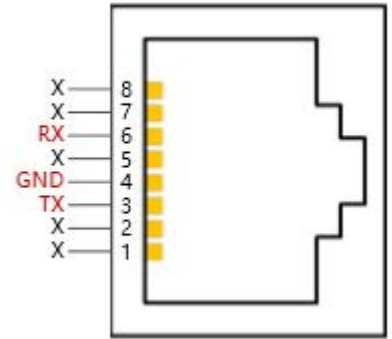
| PIN Number | Signal Marks | Function   |
|------------|--------------|--|
| 1          | OUT1+        | Digital Signal Output<br>Maximum Output Current: 100mA   |
| 3          | OUT1-        |  |
| 5          | OUT2+        |  |
| 7          | OUT2-        |  |
| 9          | OUT3         | Digital Signal Output<br>Maximum Output Current: 20mA  |
| 11         | OUT4         |  |
| 20         | OUT5         |  |
| 13         | COMO         |  |
| 15         | VDD          |  |
| 17         | VEE          | 24VDC Power Supply Output<br>Voltage Range: 24VDC ± 20%, Maximum Current: 300 mA                                       |
| 2          | COMI         | DINx Com Port, Common Pin of Digital Input   |
| 4          | DIN1         | Digital Signal Input<br>VinH (active): 12.5VDC-30VDC,<br>VinL (inactive): 0VDC-5VDC,<br>input freq.: <1KHz             |
| 6          | DIN2         |  |
| 8          | DIN3         |  |
| 10         | DIN4         |  |
| 12         | DIN5         |  |
| 14         | DIN6         |  |
| 16         | DIN7         |  |
| 19         | AIN1 +(MA/ ) |  |
| 21         | AIN1- (MB/ ) |  |
| 23         | AIN2+ (MZ/ ) | Analog Input<br>Resolution: 12 Bit, Input Resistance: 350 KΩ<br>Analog Bandwidth: 1KHz, Input Voltage Range: -10V +10V |
| 25         | AIN2-        |  |
| 27         | MA+/(MA)     | Pulse Input<br>Input Voltage: 3.3V-24V<br>Maximum Frequency: 500KHz  |
| 29         | MA-          |  |
| 31         | MB+/(MB)     |  |
| 33         | MB-          |  |
| 35         | MZ+/(MZ)     |  |
| 18         | MZ-          | 5VDC Power Supply Output<br>Maximum Current: 100mA   |
| 22         | +5V          |  |
| 24         | GND          | Encoder Output<br>Voltage: Voh=3.4V, Vol=0.2V<br>Maximum Current: ±20mA, Maximum Frequency: 10MHz                      |
| 26         | ENCO_Z       |  |
| 28         | ENCO_Z       |  |
| 30         | ENCO_B       |  |
| 32         | ENCO_B       |  |
| 34         | ENCO_A       |  |
| 36         | ENCO_A       |  |

**X4**


### RS232 Port (X3)

| PIN Number | Signal Marks | Function                |
|------------|--------------|-------------------------|
| 1          | NC           | Reserved                |
| 2          | NC           | Reserved                |
| 3          | TX           | Send Controller Data    |
| 4          | GND          | Signal Ground           |
| 5          | NC           | Reserved                |
| 6          | RX           | Receive Controller Data |
| 7          | NC           | Reserved                |
| 8          | NC           | Reserved                |

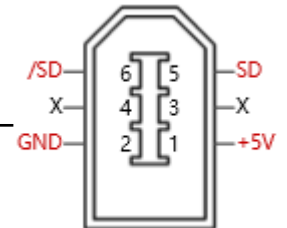
X3



### Encoder Input (X5)

| PIN Number | Signal Marks | Function                               |
|------------|--------------|--|
| 1          | +5V          | 5VDC Positive Terminal of Power Output |
| 2          | GND          | Negative Terminal of Power Output      |
| 3          | CLOCK+       | Positive Terminal of Clock             |
| 4          | CLOCK-       | Negative Terminal of Clock             |
| 5          | SD           | Data Signal                            |
| 6          | /SD          | Data Signal                            |

X5



### RS485 Communication Port Input (X6A)

| PIN Number | Signal Marks | Function              |
|------------|--------------|-----------------------|
| 1          | RX+          | Receive Data          |
| 2          | RX-          | Receive Data          |
| 3          | NC           | Reserved              |
| 4          | TX-          | Send Data             |
| 5          | TX+          | Send Data             |
| 6          | NC           | Reserved              |
| 7          | +5VB         | Isolated 5V Output *1 |
| 8          | GNDB         | Signal Ground         |

X6A



\*1 = Series a 100 Ohm resistance inside, used as pull-up resistance or pull-down resistance.

### RS485 Communication Port Output (X6B)

| PIN Number | Signal Marks | Function              |
|------------|--------------|-----------------------|
| 1          | RX+          | Receive Data          |
| 2          | RX-          | Receive Data          |
| 3          | NC           | Reserved              |
| 4          | TX-          | Send Data             |
| 5          | TX+          | Send Data             |
| 6          | NC           | Reserved              |
| 7          | +5VB         | Isolated 5V Output *1 |
| 8          | GNDB         | Signal Ground         |

X6B