

# KNC-PLC-KS105 - Series



## FEATURES

- **Four High-Speed Counters, Max 200 kHz**
- **Four High-Speed Outputs, Max 200 kHz**
- **24VDC Power Required**
- **8 Digital Inputs, 8 Digital Outputs**
- **3 Year Lithium Battery for Data Retention**
- **Multiple Communication Ports**
- **4K Bytes of Programming Instructions**
- **5K Bytes of Data**
- **448 Bytes of EEPROM Backup**



## DESCRIPTION

The KNC-PLC-KS105 is a small and thin PLC with high performance. It includes 16 digital I/O, 4 high-speed counters, 4 high-speed pulse outputs, 256 timers, 256 counters, RTC (Real Time Clock), 4 interrupts, one RS485 communication port, one RS232 programming port, optional CANopen port, and is expandable with up to 14 I/O modules. The high-speed counters come in 9 operation modes and support a single-phase or dual-phase frequency up to 200 KHz. In the 9 different modes, each counter has its own inputs for clock, direction control, start and reset, and has a 32-bit preset value. Three of the four high-speed pulse outputs – channels 0, 1, and 2 – can reach a maximum frequency of 200 KHz, while channel 3 can reach a maximum frequency of 10 KHz. All four high-speed output channels support both PTO and PWM. The KNC-PLC-KS105C1-16DT and KNC-PLC-KS105C2-16DT support CANopen protocol. The free KincoBuilder software provides absolute and relative positioning, homing, jogging, and quick stop instructions. The KNC-PLC-KS105 Series is an ideal hub for data processing with field devices such as temperature modules, servo drives, field busses, and more.

## SPECIFICATIONS

| Technical Specifications                     |  |
|--|--|
| <b>DI Specifications</b>                     |  |
| Input Points                                 | <b>8</b>   |
| Input Type                                   | <b>Source / Sink</b>   |
| Rated Input Voltage                          | <b>DC 24V (Max. 30V)</b>   |
| Rated Input Current                          | <b>3.5mA@24VDC</b>   |
| Max Input Voltage of Logic 0                 | <b>5V @ 0.7mA</b>  |
| Minimum Input Voltage of Logic 1             | <b>Common Channel: 11V @ 2.0mA</b>                               |
| Input Delay                                  | <b>Off -to- On: 1.2 µs;<br/>On -to- Off: 0.5 µs;</b>             |
| Isolation Between Input and Internal Circuit | <b>Mode: Opto-Electrical Isolation<br/>Voltage: 500VAC/1 min</b> |

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| Technical Specifications                      |   |
|---|---|
| DO Specifications                             |   |
| Output Points                                 | 8   |
| Output Type                                   | Source  |
| Rated Power Supply Voltage                    | 24 VDC, Allowance Range: 20.4-28.8 (Same as Power Supply)   |
| Output Current Per Channel                    | Rated Current: 200mA, Max. 300mA @24VDC   |
| Instant Impulse Current Per Channel           | 1A, Less Than 1s  |
| Output Leakage Current                        | Max. 0.5 $\mu$ A  |
| Output Impedance                              | Max. 0.2 $\Omega$   |
| Output Delay                                  | <ul style="list-style-type: none"> <li>• Off - to - On: Common Channel: 12<math>\mu</math>s; HSC Channel: 0.5s</li> <li>• On - to - Off: Common Channel: 35<math>\mu</math>s; HSC Channel: 1<math>\mu</math>s</li> </ul>                                |
| Protection:                                   | <ul style="list-style-type: none"> <li>-Reverse Polarity Protection of Power Supply: No</li> <li>-Inductive Load Protection: Yes</li> <li>-Short-Circuit Protection: Yes</li> <li>-Reverse Polarity Protection of Output: Yes, less than 10s</li> </ul> |
| Isolation Between Output and Internal Circuit | <ul style="list-style-type: none"> <li>• Mode: Opto-electrical Isolation</li> <li>• Voltage: 500VAC / 1 min</li> </ul>  |

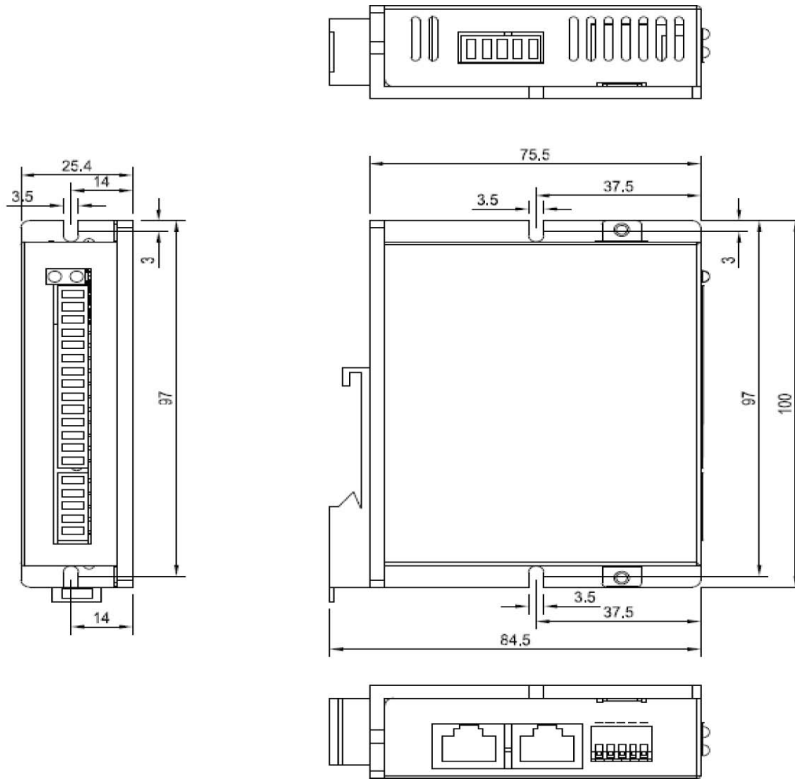
| Parameters          | KS105-16DT   | KS105C1-16DT                        | KS105C2-16DT                        |
|---------------------|--|-------------------------------------|-------------------------------------|
| <b>Power Supply</b> |  |                                     |                                     |
| Rated Voltage       | 24VDC  |                                     |                                     |
| Voltage Range       | 20.4 - 28.8VDC   |                                     |                                     |
| <b>I/O</b>          |  |                                     |                                     |
| Digital             | 8*DI / 8*DO  |                                     |                                     |
| Serial Port         | PORT0, RS232, Support Programming Protocol, MODBUS RTU Slave, Free Protocol<br>PORT1,RS485, Support Programming Protocol, MODBUS RTU Master, Free Protocol |                                     |                                     |
| High Speed Counter  | 4, Max 200KHZ, support single and double phase   |                                     |                                     |
| High Speed Output   | 4 Channel 0&1&2 Max 200KHz (load resistance is less than 1.5K Ω at the highest frequency). Channel 3 Max 10KHz   |                                     |                                     |
| Interrupt           | 4, I0.0 - I0.3 interrupt up and down   |                                     |                                     |
| Expansion           | 14   |                                     | 14                                  |
| CAN                 |  | CANopen Master or CAN Free Protocol | CANopen Master or CAN Free Protocol |
| <b>Storage</b>      |  |                                     |                                     |
| Programming         | Max 4K Bytes Instruction   |                                     |                                     |
| Data                | M Area 1K Bytes; V Area 4K Bytes   |                                     |                                     |
| Data Backup         | E2PROM, 448 Bytes  |                                     |                                     |
| Data Retention      | 2K Bytes. Lithium Battery , 3 Years at Normal Environment  |                                     |                                     |
| <b>Other</b>        |  |                                     |                                     |
| Timer               | 256<br>1ms : 4<br>10ms : 16<br>100ms : 236   |                                     |                                     |
| Timer Interruption  | 2, 0.1ms   |                                     |                                     |
| Counter             | 256  |                                     |                                     |
| RTC                 | Yes, the difference is 5 min/month at 25°C   |                                     |                                     |

**Transport and Storage**

|                       |                   |  |
|-----------------------|-------------------|--|
| Ambient Conditions    | Temperature       | -40 ~ +70° C   |
|                       | Relative Humidity | 10%~95%, No Condensation                                       |
|                       | Altitude          | Up to 3000m  |
| Mechanical Conditions | Free Falls        | With manufacturer's original packaging, 5 falls from 1m Height |

**Normal Operation**

|                                     |                                 |   |
|-------------------------------------|---------------------------------|---|
| Ambient Conditions                  | Air Temperature                 | Open Equipment : 10 ~ +55°C; Enclosed Equipment: -10 ~ +40°C  |
|                                     | Relative Humidity               | 10% ~ 95%, No Condensation  |
|                                     | Altitude                        | Up to 2000m   |
|                                     | Pollution Degree                | For use in Pollution Degree 2   |
| Mechanical Conditions               | Sinusoidal Vibrations           | 5<f<8.4Hz, Occasional: 3.5mm Amplitude; Continuous: 1.75mm Amplitude. 8.4<f<150, occasional: 1.0g acceleration; continuous: 0.5g acceleration |
|                                     | Shock                           | Occasional excursions to 15g, 11 ms, half-sine, in each of 3 mutually perpendicular axes  |
| Electromagnetic Compatibility (EMC) | Electrostatic Discharge         | ±4kV Contact, ±8kV Air. Performance Criteria B  |
|                                     | High Energy Surge               | A.C. Main Power: 2KV CM, 1KV DM;<br>D.C. Main Power: 0.5KV CM, 0.5KV DM;<br>I/Os and Communication Port: 1KVCM<br>Performance Criteria B.     |
|                                     | Fast Transient Bursts           | Main Power: 2KV, 5KHz. I/Os and Communication Port: 1KV, 5kHz.<br>Performance Criteria B.   |
|                                     | Voltage Drops and Interruptions | A.C. Supply: at 50Hz, 0% voltage for 1 period; 40% voltage for 10 periods; 75% voltage for 20 periods.<br>Performance Criteria A.             |

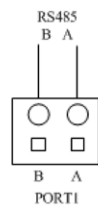
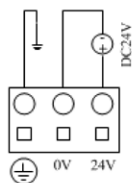
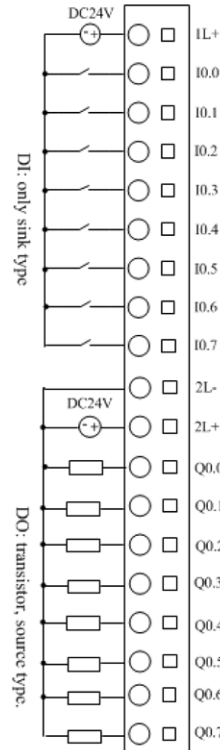


## KS105-16DT

Ext.  
Expansion Bus (in RJ45)

PORT0  
RS232 (in RJ45)

| Pin | Function |
|-----|----------|
| 3   | RXD      |
| 4   | TXD      |
| 6   | GND      |





## KS105C1-16DT

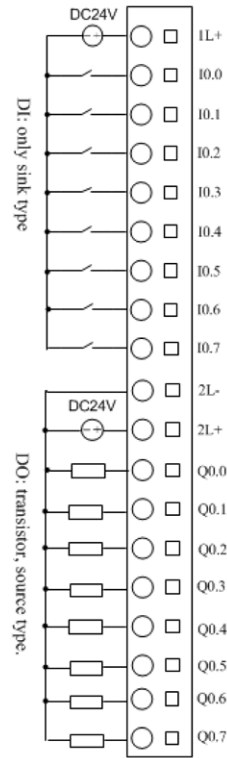
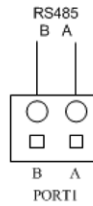
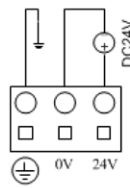
CAN  
CAN (in RJ45)

|     | Pin | Function |
|-----|-----|----------|
| CAN | 1   | CAN_H    |
|     | 2   | CAN_L    |
|     | 3   | CAN_GND  |

PORT0  
RS232 (in RJ45)

|       | Pin | Function |
|-------|-----|----------|
| RS232 | 3   | RXD      |
|       | 4   | TXD      |
|       | 6   | GND      |

There is one same CAN in the two RJ45 interfaces.



## KS105C2-16DT

CAN 1  
CAN (in RJ45)

|     | Pin | Function |
|-----|-----|----------|
| CAN | 1   | CAN_H    |
|     | 2   | CAN_L    |
|     | 3   | CAN_GND  |

The CAN 1 can also be used as expansion bus

CAN 2/PORT 0  
(in RJ45)

|       | Pin | Function |
|-------|-----|----------|
| CAN   | 1   | CAN_H    |
|       | 2   | CAN_L    |
| RS232 | 3   | RXD      |
|       | 4   | TXD      |
|       | 6   | GND      |

