

Parallel Port Interface PPI-04.

The PPI-04 module is a buffered interface allowing direct connection of up to four single-axis step motor drivers to the parallel port of the personal computer. It can be used with BSD-01 v2 or BSD-02 step motor drivers manufactured by Interinar. No separate power supply necessary. It is a perfect interface for all CNC applications where standard PC is used as a controlling device. The PPI-04 simplifies connection between computer and drivers eliminating soldering and mistakes made with custom cables.

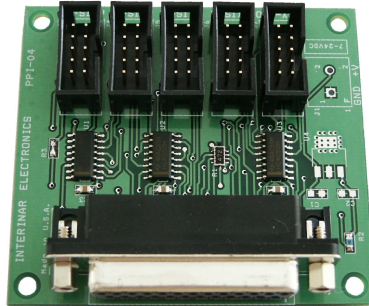


Figure 1 Parallel Port Interface PPI-04

The standard DB25 Male to Male Cable connects a PC to the PPI-04 module. This straight-thru cable must be fully-wired to support parallel application. Step Motor Drivers are connected to the PPI-04 module using 10-conductor ribbon cables with female receptacles on both sides matching 0.100" x 0.100" headers installed on BSD Drivers and PPI-04 Interface. The power for internal circuitry is provided directly from the step motor driver through X-Axis connector J3. Only this header provides the power so when only one step motor driver will be used it must be connected to connector J3.

Table 1: 10-pin Header J3, J4, J5, J6 (see Figure 2)

| Pin # | Pin Description |
|-------|---|
| 1 | ENABLE - output, active-low. Connects to the ENABLE input of the driver. |
| 2 | +5V DC – positive supply voltage input. J3 ONLY . Not connected on J4, J5, J6. |
| 3 | NOT CONNECTED. |
| 4 | NOT CONNECTED. |
| 5 | DIRECTION - output. Connects to the DIR input of the driver. |
| 6 | STEP – output. Connects to the STEP input of the driver. |
| 7 | NOT CONNECTED. |
| 8 | NOT CONNECTED. |
| 9 | NOT CONNECTED. |
| 10 | GND - ground. |

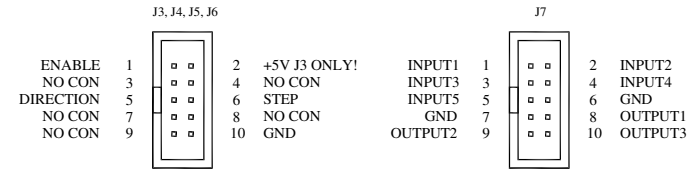


Figure 2. 10-Pin Header J2

Table 2: 10-pin Header J7 (see Figure 2)

| Pin # | Pin Description |
|-------|---|
| 1 | INPUT1 – input. Auxiliary input may be used to connect external signals to LPT port. |
| 2 | INPUT2 – input. Auxiliary input may be used to connect external signals to LPT port. |
| 3 | INPUT3 – input. Auxiliary input may be used to connect external signals to LPT port. |
| 4 | INPUT4 – input. Auxiliary input may be used to connect external signals to LPT port. |
| 5 | INPUT5 – input. Auxiliary input may be used to connect external signals to LPT port. |
| 6 | GND - ground. |
| 7 | GND - ground. |
| 8 | OUTPUT1 – output. Auxiliary output may be used to connect external devices to LPT port. |
| 9 | OUTPUT2 – output. Auxiliary output may be used to connect external devices to LPT port. |
| 10 | OUTPUT3 – output. Auxiliary output may be used to connect external devices to LPT port. |

Table 3: 25-pin Connector J2 (see Figure 2)

| Pin # | Pin Description |
|-------|---|
| 1 | ENABLE - output, active-low. When logic-low all outputs of the stepper drivers are enabled. |
| 2 | STEP X – output. A low-to-high transition advances the motor one increment. |
| 3 | DIRECTION X- output. Low or High determines the direction of the rotation of the motor X. |
| 4 | STEP Y – output. A low-to-high transition advances the motor one increment. |
| 5 | DIRECTION Y- output. Low or High determines the direction of the rotation of the motor Y. |
| 6 | STEP Z – output. A low-to-high transition advances the motor one increment. |
| 7 | DIRECTION Z- output. Low or High determines the direction of the rotation of the motor Z. |
| 8 | STEP A – output. A low-to-high transition advances the motor one increment. |
| 9 | DIRECTION A- output. Low or High determines the direction of the rotation of the motor A. |
| 10 | INPUT1 – input. Auxiliary input may be used to connect external signals to LPT port. |
| 11 | INPUT2 – input. Auxiliary input may be used to connect external signals to LPT port. |
| 12 | INPUT3 – input. Auxiliary input may be used to connect external signals to LPT port. |
| 13 | INPUT4 – input. Auxiliary input may be used to connect external signals to LPT port. |
| 14 | OUTPUT1 – output. Auxiliary output may be used to connect external devices to LPT port. |
| 15 | INPUT5 – input. Auxiliary input may be used to connect external signals to LPT port. |
| 16 | OUTPUT2 – output. Auxiliary output may be used to connect external devices to LPT port. |
| 17 | OUTPUT3 – output. Auxiliary output may be used to connect external devices to LPT port. |
| 18 | GND - signal ground. |
| 19 | GND - signal ground. |
| 20 | GND - signal ground. |
| 21 | GND - signal ground. |
| 22 | GND - signal ground. |
| 23 | GND - signal ground. |
| 24 | GND - signal ground. |
| 25 | GND - signal ground. |

The PPI-04 can be mounted using four holes located in the corners of the circuit board. Use plastic standoffs or spacers at least ¼” high to support the board. To fasten the board use #4 screws.

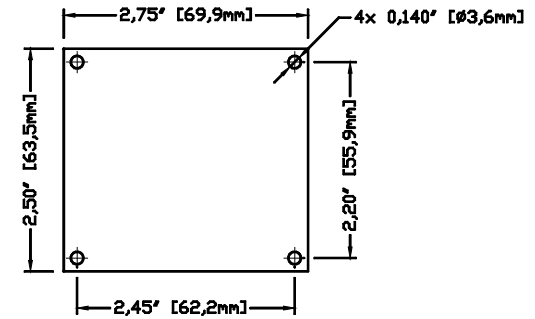


Figure 3 Dimensions and Mounting Holes

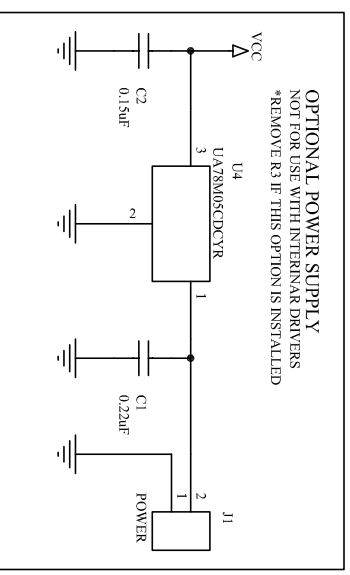
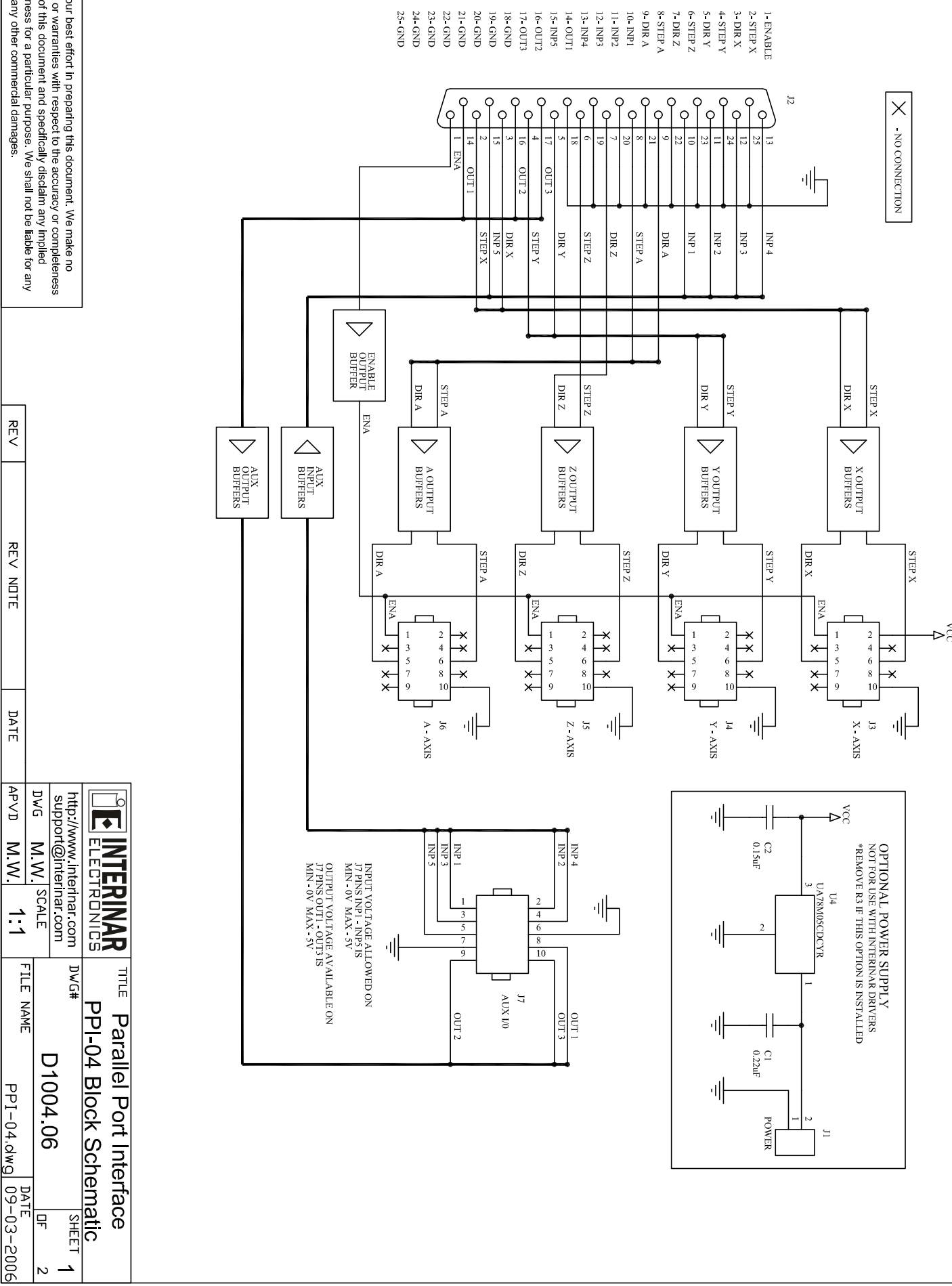
Table 4: Electrical Characteristics at Ta=+25°C

| Characteristic | Symbol | Test Condition | Limit | | | Unit |
|-----------------------------|---------------------|----------------|----------|-----|-----|------|
| | | | Min | Typ | Max | |
| Power Supply Voltage | V _{CC} | Operating | from BSD | | | V |
| Aux Input Logic Voltage | V _{IN(1)} | | 3.5 | - | - | V |
| | V _{IN(0)} | | - | - | 1.5 | V |
| Aux Input Voltage | V _{IN} | | 0 | - | 5 | V |
| Max Aux Input Current | I _{IK} | per Input | - | - | ±15 | mA |
| Aux Output Logic Voltage | V _{OUT(1)} | TTL Loads | 3.7 | - | - | V |
| | V _{OUT(0)} | | - | - | 0.4 | V |
| Aux Output Voltage | V _{OUT} | | 0 | - | 5 | V |
| Max Aux Output Current | I _{OK} | per Output | - | - | ±15 | mA |
| Operating Temperature Range | - | | -20 | - | +85 | °C |

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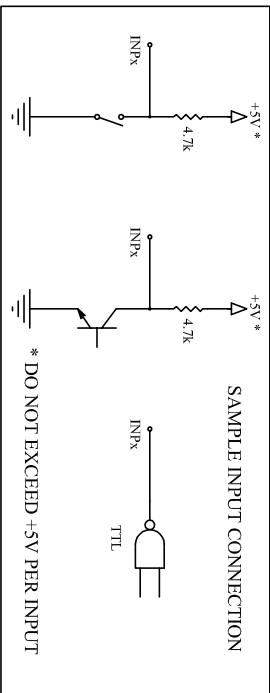
| REV | REV NOTE | DATE |
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|------|---|---|------------|
| | TITLE | Parallel Port Interface PPI-04 Block Schematic | SHEET |
| | http://www.interinar.com support@interinar.com | | DWG# |
| DWG | SCALE | FILE NAME | DATE |
| M.W. | 1:1 | PPI-04.dwg | 09-03-2006 |
| APVD | M.W. | | |



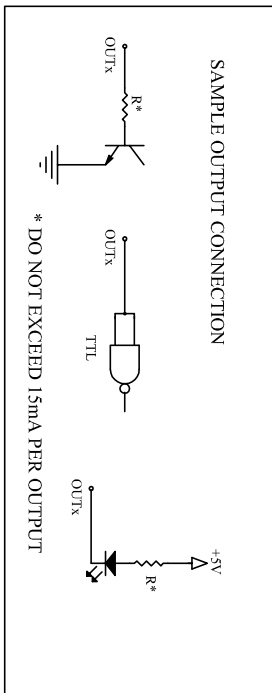
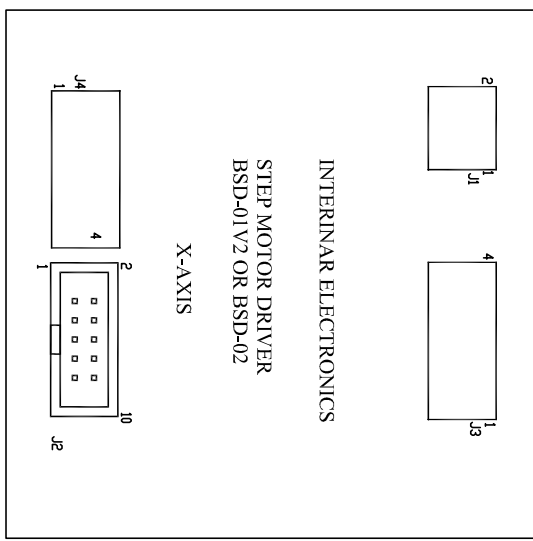
INPUT VOLTAGE ALLOWED ON J7 PINS INP1 - INP5 IS MIN - 0V MAX - 5V
 OUTPUT VOLTAGE AVAILABLE ON J7 PINS OUT1 - OUT3 IS MIN - 0V MAX - 5V

AUXILIARY CIRCUITS CONNECTED TO J7 - SAMPLES

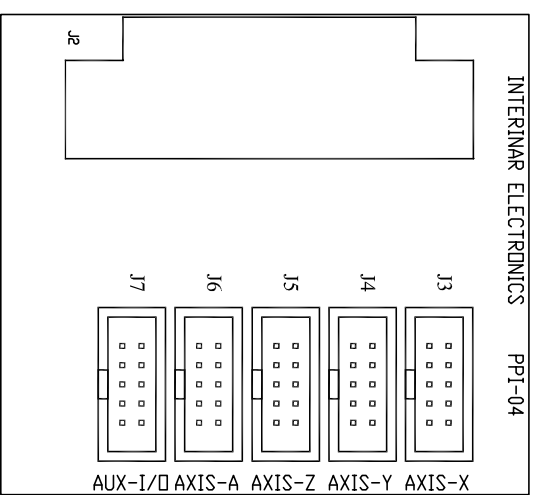
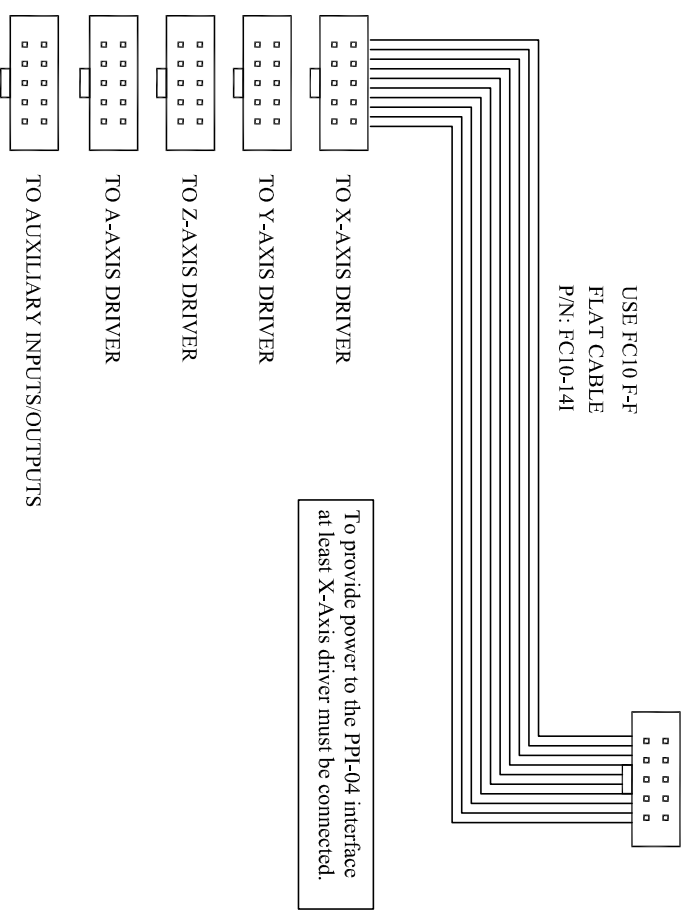


The PPI-04 interface does not offer a galvanic isolation between PC and the motor driver.
Use isolated power supply only.
Before connecting parallel cable to PC check the voltage between chassis of the PC and GND of the PPI-04. The voltage difference should not exceed 0.5Vdc.

The samples of the auxiliary circuits shown to the left are provided for illustrational purposes only and should be treated as such. The real application may require different values of the components and/or modification of the circuitry.



USE FC10 F-F
FLAT CABLE
P/N: FC10-14I



TO PARALLEL PORT
OF THE PC COMPUTER

USE DB25 M-M
STRAIGHT THRU CABLE
P/N: PC305-06M

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