TRC210

PUMA Amplifier Package

Assembly

Interface Installation

The TRC210 amplifier package is designed to interface with the Trident Robotics TRC004 interface card or the Servo To Go S8. The TRC004 connects to one 34-pin and one 40-pin double-row header. The S8 connects to four 50-pin double-row headers. Standard 0.050”-spaced ribbon cable can be used to connect the interface, but all cables must be kept under two meters in length.

Four metric tapped holes in the heat sink are provided for mounting the TRC210 in customer equipment.

Power and signal connections are made through screw terminal block TB1 in accordance with figure 1.

14	
13	
12	/ArmOn: Normally open pushbutton to ground to turn on arm power
11	/Estop: High to run, low when arm power must be off
10	BrakeRelease: Toggle switch that closes to ground to run
9	
8	-HV: Low side of high voltage (motor) power supply
7	-HV: Low side of high voltage (motor) power supply
6	-HV: Low side of high voltage (motor) power supply
5	-12V
4	Ground
3	+12V
2	+5V
1	+24V

Each screw terminal is rated to carry 16 amps.

Additional Axes

The TRC210 has provisions for two additional motors. Motor leads may be connected directly to the amplifier terminal blocks. Alternatively, one set of motor leads can be run through the PUMA wiring harness by connecting the amplifier to terminal block M7 (observing proper polarity). This will appear as the seventh motor in the PUMA wiring harness. Signal lines for the additional axes, including an incremental shaft encoder, an analog input, and two digital signals, are connected to the ten-pin double-row male headers P8 and P9. P8 is for the seventh axis and P9 is for the eighth axis. Pin assignments are illustrated in figure 2.

Digital output - 10	9 - Digital input
No connection - 8	7 – No connection
Ground - 6	5 - Encoder index channel
Encoder channel B - 4	3 – Encoder channel A
Ground - 2	1 – Analog input

The power amplifiers for the additional axes must be configured to meet customer requirements. Check the enclosed manuals to adjust current limits and motor inertia.

Brake Release

To release the brakes manually, open the brake release switch to enable release of the brakes. Support the arm to prevent an uncontrolled fall, and press the button at the base of the robot to disengage the brakes. The status of the external brake release switch can be read on pin 27 of P1 on the Servo To Go card. Brake release can also be enabled by software by bringing pin 7 of P1 on the Servo To Go card high.

Motor Overtemp

The PUMA has motor over temperature switches that are readable via the P2 port on the Servo To Go card or via P6 on the Trident Robotics card.

Calibration Flag

Pins 13 and 29 of P1 on the Servo To Go card are tied together to provide a read/write calibration flag. Similar functionality is provided on the TRC004.

Watchdog

Both servo interfaces provide a watchdog timer that prevents powering up the arm if a controller is not running. See the respective servo interface manual for details.