Robot Model Name

T1

Specifications

Physical specs:
- Height: 40 cm
- Weight: 1660 g
- Walking speed: 10 cm/s

Degrees of freedom:
- 20 DOF
- 6 DOF on each leg
- 3 DOF on each arm
- 2 DOF on the head

Servo motors:
- 4 HS-8498HB digital servomotors by HITEC (Karbonite gears)
  - 6V-7.4V operating range
  - 7.4 kg cm @ 6V (stall torque)
  - 300°/s @ 8V (max speed)
- 1.6 HSR-5498SG digital servomotors by HITEC (Steel gears)
  - 6V-7.4V operating range
  - 11 kg cm @ 6V (stall torque)
  - 272°/s @ 8V (max speed)

Sensors:
- 1 Minoru stereo webcam
  - 640x480 @ 15fps, 320x240 @ 30fps
  - YC_C, (color space)
- 1 6 DOF IMU
  - 3 accelerometer axes (analog outputs)
    - 300 mV/g sensitivity, ±3 g range
  - 3 gyroscope axes (analog outputs)
    - 0.85 mV/s² sensitivity, ±300°/s range

Processing unit:
- Roboard RB-100
  - based on the 32-bit x86 Vortex86DX CPU
  - 1 GHz, 256 MB DDR2 RAM
  - RS-485, 32 PWM channels, 3 USB 2.0 ports,
  - RS-232, SPI/ITC bus, 8 10-bit ADC ports,
  - mini PCI socket, microSD slot
  - 400 mA @ 5V (power consumption)
  - 96 mm x 56 mm, 40 g
Robot Model Name

T2

Specifications

Physical specs:
- Height: 53 cm
- Weight: 2020 g
- Walking speed: 15 cm/s

Degrees of freedom:
- 21 DOF
  - 6 DOF on each leg
  - 3 DOF on each arm
  - 2 DOF on the head
  - 1 DOF on the hip

Servo motors:
- 19 KRS-2555HV digital servomotors by Kondo (Metal gears)
  - 9 V - 12 V operating range
  - 14 kg.cm @ 11.1 V (stall torque)
  - 429°/s @ 11.1 V (no load speed)
- 2 HS-8498HB digital servomotors by HITEC (Karbonite gears)
  - 6V-7.4V operating range
  - 7.4 kg.cm @ 6V (stall torque)
  - 300°/s @ 6V (max speed)

Sensors:
- 1 Minaru stereo webcam: 640x480 @ 15fps, 320x240 @ 30fps. YC/C, (color space)
- 1 6 DOF IMU: 3 accelerometer axes, 300 mV/g sensitivity, ±3 g range (analog outputs)
  - 3 gyroscope axes, 0.83 mV/°/s sensitivity, ±300°/s range (analog outputs)
- 1 9 DOF IMU: 3 accelerometer axes resolution ±1.6g (I'C Interface)
  - 3 magnetometer axes Magnetic Field range ±28 Oe (I'C Interface)
  - 3 gyroscope axes range ±2000°/s (I'C Interface)

Processing unit:
- Robohead RB-110 based on the 32-bit x86 Vortex86DX CPU
  - 1 Ghz, 256 MB DDR2 RAM
  - RS-485, 16 PWM channels, 1 USB 2.0 ports,
  - RS-232, SPI/PC bus, 8 10-bit ADC ports,
  - mini PCI socket, microSD slot, 2 hi-speed serial
  - 400 mA @ 5V (power consumption)
  - 96 mm x 56 mm, 40 g

- Kondo RCB4 based on the M1AD/26A MCU by Renesas
  - 8 SIO ports for two systems of ICS3.0 compliant device
  - 10 AD ports, 10 PIO ports, COM ports max speed 1.25Mbps
Robot Model Name

T3

Specifications

Physical specs:
- Height: 53 cm
- Weight: 2060 g
- Walking speed: 15 cm/s

Degrees of freedom:
- 21 DOF
  - 6 DOF on each leg
  - 3 DOF on each arm
  - 2 DOF on the head
  - 1 DOF on the hip

Servo motors:
- 19 KRS-2555SHV digital servomotors
  - by Kondo (Metal gears)
  - 9 V - 12 V operating range
  - 14 kg.cm @ 11.1V (stall torque)
  - 429°/s @ 11.1V (no load speed)
- 2 HS-849BHB digital servomotors
  - by HITEC (Karbonite gears)
  - 6V-7.4V operating range
  - 7.4 kg.cm @ 6V (stall torque)
  - 300°/s @ 6V (max speed)

Sensors:
- 1 Minaru stereo webcam
  - 640x480 @ 15fps, 320x240 @ 30fps, YC, C, (color space)
- 1 6 DOF IMU
  - 3 accelerometer axes, 300 mV/g sensitivity, ±3 g range (analog outputs)
  - 3 gyroscope axes, 0.83 mV/°/s sensitivity, ±300°/s range (analog outputs)
- 1 9 DOF IMU
  - 3 accelerometer axes resolution ±1.8g (PC interface)
  - 3 magnetometer axes Magnetic Field range ±800 Oe (PC interface)
  - 3 gyroscope axes range ±2000°/s (PC Interface)

Processing unit:
- Roboard RB-110
  - based on the 32-bit x86 Vortex86DX CPU
  - 1 GHz, 256 MB DDR2 RAM
  - RS-485, 16 PWM channels, 1 USB 2.0 ports,
  - RS-232, SPI/PC bus, 8 10-bit ADC ports,
  - mini PCI socket, microSD slot, 2 x highspeed serial
  - 400 mA @ 5V (power consumption)
  - 96 mm x 56 mm, 40 g
- Kondo RCB4
  - based on the M16C/26A MCU by Renesas
  - 8 SIO ports for two systems of ICS3.0 compliant device
  - 10 AD ports, 10 PIO ports, COM ports max speed 1.25Mbps
- Gumstix Overo Fire COM with Summit board
  - based on TI OMAP 3530; ARM Cortex-A8 CPU + C64x+ DSP core
  - DVI-D, USB, 8 PWM, 16 I/0 ports, SPI bus, 8 A/D, 802.11g
Robot Model Name

TEC04

Specifications

Physical specs:
- Height: 40 cm
- Weight: 1.6 Kg
- Walking speed: 1.3 m/s

Degrees of freedom:
- 20 DOF
- 6 DOF on each leg
- 3 DOF on each arm
- 2 DOF on the head

Servo motors:
- 16 Dynamixel AX-12+ digital servomotors by Robotis (Plastic gears)
  - 9V - 12V operating range
  - 15 kg·cm @ 12V (stall torque)
  - 360°/s @ 10V (max speed)

- 4 Dynamixel AX-18+ digital servomotors by Robotis (Plastic gears)
  - 9V - 12V operating range
  - 18 kg·cm @ 12V (stall torque)
  - 360°/s @ 10V (max speed)

Sensors:
- 1 UI-1226LE-C camera by IDS WVG A 762×480 @ 87fps (max rate) RGB, YCbCr, (color spaces)

- 6 DOF IMU
  - 3 accelerometer axes, 300 mV/g sensitivity, ±3 g range (analog outputs)
  - 3 gyroscope axes, 0.03 mV/s sensitivity, ±300°/s range (analog outputs)

- 9 DOF IMU
  - 3 accelerometer axes resolution ±16g (PC interface)
  - 3 magnetometer axes Magnetic Field range ±8 Oe (PC interface)
  - 3 gyroscope axes range ±2000°/s (PC interface)

Processing unit:
- Robo board RB-110
- Based on the 32-bit x86 Vortex86DX CPU
  - 1 GHz, 256 MB DDR2 RAM
  - RS-485, 16 PWM channels, 1 USB 2.0 ports,
  - RS-232, SPI/PC bus, 8 10-bit ADC ports,
  - mini PCI socket, microSD slot, 2 hi-speed serial
  - 400 mA @ 5V (power consumption)
  - 96 mm x 56 mm, 40 g
Robot Model Name

TEC05
DarwinOP

Specifications

**Physical specs:**
- Height: 45.5 cm
- Weight: 2.8 Kg
- Walking speed: 24 cm/s (default gait)

**Degrees of freedom:**
- 20 DOF
- 6 DOF on each leg
- 3 DOF on each arm
- 2 DOF on the head

**Servo motors:**
- 20 Dynamixel MX-28+ digital servomotors
- By Robotis (Metal gears)
- 9V - 12V operating range
- 24 kg-cm @ 12V (stall torque)
- 360°/s @ 10V (max speed)

**Sensors:**
- 1 C905 HD webcam
  - By Logitech, HD 1280x720 @ 30fps (max rate) YUV (color space)
- 1 6 DOF IMU
  - 3 accelerometer axes
  - 3 gyroscope axes

**Processing unit:**
- FIIPC 2i
- By CompuLab, based on the Intel Atom Z530 microprocessor
  - 1.6 GHz @533MHz FSB
  - L2=512KB, 1GB DDR2 RAM, 2 USB,
  - 4GB NAND flash disk, 802.11 b/g/n, 1 Gigabit Ethernet
  - 5-7 W (power consumption)
  - 104 mm x 96 mm x 23 mm, 92 g

- CM-730
  - By Robotis, based on STMicroelectronics 32F103RE ARM Cortex 32-bit CPU
  - 72MHz, 512KB Flash, 64KB SRAM
  - 5 LED, 2 RGB LED, 3 push buttons, 1 buzzer
  - 13 ADC, 5 TTL serial ports
  - 80 mm x 75 mm x 20 mm