



Robot Model Name

T1



Specifications

Physical specs:

Height	40 cm
Weight	1460 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
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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 @ 6V (max speed)
16 HSR-5498SG digital servomotors	by HITEC (Steel gears) 6V-7.4V operating range 11 kg cm @ 6V (stall torque) 272°/s @ 6V (max speed)

Sensors:

1 Miniru stereo webcam	640×480 @ 15fps, 320×240 @ 30fps Y _C C _r (color space)
1 6 DOF IMU	3 accelerometer axes (analog outputs) 300 mV/g sensitivity, ±3 g range 3 gyroscope axes (analog outputs) 0.83 mV/°/s 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/PC bus, 8 10-bit ADC ports, mini PCI socket, microSD slot 400 mA @ 5V (power consumption) 96 mm x 56 mm, 40 g
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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
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Servo motors:

19 KRS-2555HV 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-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 Miniru stereo webcam	640×480 @ 15fps, 320×240 @ 30fps, YC _u C _v , (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 ±16g (I ² C interface) 3 magnetometer axes Magnetic Field range ±8 Oe (I ² C interface) 3 gyroscope axes range ±2000°/s (I ² C interface)

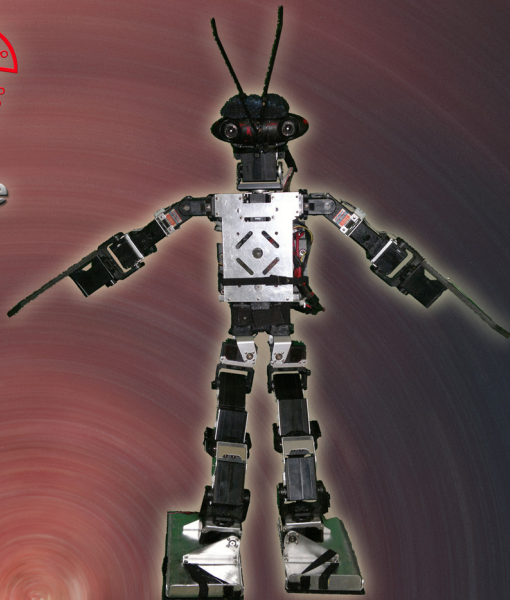
Processing unit:

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/I ² C 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 M14C/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
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Servo motors:

19 KRS-2555HV 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-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 MinorU stereo webcam	640×480 @ 15fps, 320×240 @ 30fps, Y _C C _U , (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 ±16g (I ² C interface) 3 magnetometer axes Magnetic Field range ±8 Oe (I ² C interface) 3 gyroscope axes range ±2000°/s (I ² C 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/I ² C 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 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, 6 PWM, I ² C port, SPI bus, 6 A/D, 802.11g



Robot Model Name

TEC04



Specifications

Physical specs:

Height	40 cm
Weight	1.6 Kg
Walking speed	13 cm/s

Degrees of freedom:

20 DOF	6 DOF on each leg 3 DOF on each arm 2 DOF on the head
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Servo motors:

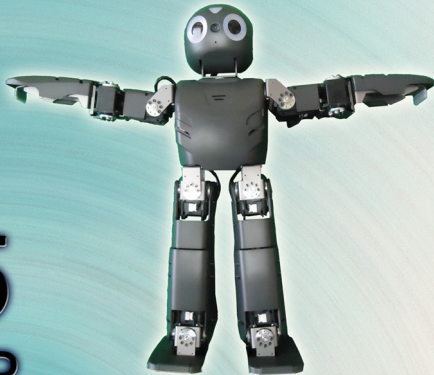
16 Dynamixel AX-12+ digital servomotors	by Robotis (Plastic gears) 9V - 12V operating range 15 kg cm @ 12V (stall torque) 360°/s @ 10V (max speed)
4 Dynamixel AX-18+ digital servomotors	by Robotis (Plastic gears) 9V - 12V operating range 18 kg cm @ 12V (stall torque) 360°/s @ 10V (max speed)

Sensors:

1 UI-1226LE-C camera	by IDS WVGA 752x480 @ 87fps (max rate) RGB, YC ₀ C ₁ (color spaces)
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 ±16g (I ² C interface) 3 magnetometer axes Magnetic Field range ±8 Oe (I ² C interface) 3 gyroscope axes range ±2000°/s (I ² C interface)

Processing unit:

Reboard 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/I ² C 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
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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
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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)
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Sensors:

1 C905 HD webcam	by Logitech, HD 1280×720 @ 30fps (max rate) YUV (color space)
1 6 DOF IMU	3 accelerometer axes 3 gyroscope axes

Processing unit:

HiPC 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