

DARwin-OP Humanoid Robot by Robotis, Korea

1. Characteristics

- A. Open Platform (H/W, S/W source shared through community)
- B. Standard PC-based robot with convenient interfaces
- C. Fully autonomous humanoid with on-board image processing capability
- D. Default walking speed: 24.0 cm/sec (9.5 in/sec) 0.25 sec/step
- E. Default standing up time from ground: 2.8 sec (from facing down) and 3.9 sec (from facing up)
- F. Actuators with durable metallic gears (Dynamixel RX-28M)
- G. 3Mbps high-speed Dynamixel bus for joint control
- H. Battery replaceable without shutting down by plugging in external power source

2. Components

- A. Fully-assembled DARwin-OP robot x1
- B. LiPo battery pack x3
- C. LiPo battery charger x1
- D. DC power supply x1
- E. USB flash drive (with installed recovery software) x1
- F. QuickStart manual x1

3. Specifications

- A. Dimensions
 - Weight 2.9kg (6.39lb)
 - Total height: 454.5mm (17.90in)
- B. Degrees of freedom
 - 6 DOF leg x2
 - 3 DOF arm x2
 - 2 DOF head & neck
- C. Main PC (fit-PC2i)

- Intel Atom Z530 CPU (clocked @ 1.6GHz)
 - 1GB RAM
 - 4GB SSD storage
 - Networking (gigabit LAN 802.3, Wi-Fi 802.11 b/g/n)
 - Connectivity (2 external USB ports, 1 HDMI port, 1 audio line-out port, 1 audio/microphone line-in port)
- D. Sub Controller (CM-730)
- STMicroelectronics 32F103RE ARM-based Cortex-M3 32-bit CPU (clocked @ 72MHz)
 - Actuator Interface (TTL port x5)
 - USB-to-Serial converter
 - ADC converters
- E. Actuator (Dynamixel RX-28M)
- Stall torque 24kgf.cm (333ozf.in) at 12V
 - Maxon coreless DC motor with contactless magnetic potentiometer
 - Reduction ratio: 193:1
 - TTL interface (daisy-chain capable up to 3Mbps bandwidth)
 - Metallic gears
- F. Sensors
- 3-axis accelerometers x1
 - 3-axis gyroscope, x1
 - 2MP HD camera x1
 - MIC Microphones x3
- G. Displays
- Head : RGB LED x1
 - Eyes : RGB LED x2
- H. Software
- OS : Linux Ubuntu v9.10
 - Programming Language : C++
 - Compiler: GNU C++ compiler (g++)
- I. Power
- Battery (Li-Po 3CELL 11.1V 1000mAh)
 - DC power (in 100V-240V 50/60Hz / out 12V 5000mA)

