ROBOT ASSEMBLY KIT TRAINER ED-7271

- 9 types of sensors, 3 types of motor modules and 4 types of application modules essential for the intelligent robot
- System structure for seizing the essence of artificial intelligence robots
- Enriched examples for the beginning level to an advanced level in the robot class
- Easy to mount modules by the clamping device
- USB high speed (480Mbps) interface
- Extensive learning for the sensors being used in the field of Ubiquitous and Home Network
- Image processing practice using USB Camera

> EXPERIMENTS

- Understanding of the Artificial Intelligence Robot
- Classification of technologies applied to the Artificial Intelligence Robot
- Basic structure, mechanism and strength and weakness of the robot
- Principle and practice of the sensor modules
- Types and characteristics of the actuators (DC Servo Motor, Step Motor, RC Motor)
- Image processing experiments using the CCD Image Sensor (Digital Image Processing theory and pattern/color recognition principles and experiments)
- Applied experiments using the Intelligent Robot Kit

Intelligent Robot Demo Kit Program

> CONFIGURATION

- Main Control Module(1 type) : Integrated Management For the Artificial Intelligence Robot
  » Motor Module Controller (DC, Step, RC Motor)
  » Power Management for motor and sensor modules
  » PC Interface Management for Sensor Modules
  » USB 2.0 Hub (USB Camera, Reserve)
- Motor Module(3 types) : Typical Motors For The Robot Design
  » DC Motor Module : Allows precise control by the application of geared and Encoder. It can be used as the robot’s actuator
  » Step Motor Module : Well-known and applied to many robots because of its simple control
  » RC Motor Module : Mainly used for the joint robot as it features simple angle control
• Sensor Module(9 types) : essential Sensors For The Artificial Intelligence Robot
  » Ultrasonic Sensor : Detects the distance of an obstacle
  » Infrared Distance Sensor : Detects the distance of an obstacle
  » Inclination Sensor : Detects the gradient of the robot
  » Electronic Compass Sensor : Detects the robot’s current moving direction
  » Voice Recognition Sensor : Renders an instruction to the robot by voice
  » Pyroelectric Sensor : Judges the presence of a human
  » Voice Direction Sensor : Judges the direction of sound
  » Illumination Sensor : Measures the light’s brightness

• Application Module(4 types) : Support Modules For The Robot Experiments
  » Bi-Directional Driving Module : Support wheel module with tires for visual motor operation
  » Slide Module : Support modules for Infrared Distance Sensor and Ultrasonic Sensor
  » Light Source Module : Support module for Illumination Sensor(for brightness control)
  » Panel Fixation Module : 3 types of auxiliary module for Image Processing Camera(circle, rectangle, triangle)

> SPECIFICATIONS

• Motor
  » DC Servo Motor : 12V, 175rpm 30 : 1
  » RC Servo Motor : 5V, 4.1kg·cm
  » Step Motor : 12V, 75Ω, 1.8 Step

• Sensor
  » Inclination : X-Y measurement ±45°
  » Electronic Compass : 0~359.9° with 0.1° resolution
  » Voice Recognition : Max. 30 words(user define)
  » Voice Direction check : Four directions by LED Indicator
  » Pyroelectric Infrared : distance : 5meter, 119˚ x 38˚
  » Ultrasonic : Frequency : 40kHz
    Detectable : 10cm to 4meter

• User Interface Port
  » USB : USB 2.0 B-plug

• Main Controller
  » Interface : USB 2.0
  » Motion : DC Motor, RC Motor, PWM Control
  » Serial Sensor Network : RS-232

• OS Environment
  » Windows : Windows 98, Me, 2000, XP

• Infrared Distance : 10cm to 80cm
• Illumination : Max. brightness 100lx
• Others : CCD Camera, Sound Sensor
• User Interface Port
  » USB : USB 2.0 B-plug

• Main Controller
  » Interface : USB 2.0
  » Motion : DC Motor, RC Motor, PWM Control
  » Serial Sensor Network : RS-232

• OS Environment
  » Windows : Windows 98, Me, 2000, XP

Main Control Module(1EA)

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• Interface : USB 2.0 High Speed(including USB 2.0 hub)
• Support Function : DC Motor Control(2 Slot), RC Motor Control, Step Motor Control, Serial Sensor Network (4 Slot)
• Operating Voltage : 12V/5A, 5V/3A
• Certification : EMI/EMC with AC Power
• Dimension : 166(W) x 86(H) x 248(D)mm
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Motor Module (3EA)

ED-7271-10
RC Motor Module (Pan/Tilt) : 1EA
• Operation Voltage : 5V
• Rated Torque : 4.2kg·cm
• Interface : 16-pin flat cable
• Dimension : 90(W) x 139(H) x 105(D)mm

ED-7271-13
DC Motor Module : 2EA
• Reduction : 30 : 1
• Rated Torque : 1.5kg·cm
• Rated Voltage : 12V
• No Load speed : 170rpm
• Incremental Encoder : 14 Pulse
• Interface : 16-pin flat cable
• Dimension : 60(W) x 82(H) x 106(D)mm

ED-7271-14
Step Motor Module : 1EA
• Operation Voltage : 12V
• Step Angle : 1.8 step
• Resistance : 75Ω
• Interface : 16-pin flat cable
• Dimension : 60(W) x 82(H) x 103(D)mm

Sensor Module (9EA)

ED-7271-1
Illumination Sensor : 1EA
• Light Sensor : Max. brightness 100lx
• Operating Voltage : 5V
• Interface : Serial Sensor Network(10-pin flat cable)
• Dimension : 60(W) x 72(H) x 80(D)mm

ED-7271-3
Ultrasonic Sensor : 1EA
• Frequency : 40kHz
• Test Range : 10cm to 4meter
• Operating Voltage : 5V
• Interface : Serial Sensor Network(10-pin flat cable)
• Dimension : 74(W) x 82(H) x 60(D)mm

ED-7271-4
Infrared Distance Sensor : 1EA
• Test Range : 10cm to 80cm
• Operating Voltage : 5V
• Interface : Serial Sensor Network(10-pin flat cable)
• Dimension : 74(W) x 82(H) x 60(D)mm
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ED-7271-5
Electronic Compass:
1EA
- Resolution: 0–359.9° with 0.1° resolution
- Operating Voltage: 5V
- Interface: Serial Sensor Network (10-pin flat cable)
- Dimension: 95(W) x 46.6(H) x 105(D)mm

ED-7271-6
Inclination Sensor:
1EA
- Measurement: X, Y Axis ±45°
- Operating Voltage: 5V
- Interface: Serial Sensor Network (10-pin flat cable)
- Dimension: 60(W) x 87(H) x 70(D)mm

ED-7271-7
Pyroelectric Infrared:
1EA
- Distance: 5m, 119° x 38°
- Operating Voltage: 5V
- Interface: Serial Sensor Network (10-pin flat cable)
- Dimension: 62(W) x 82(H) x 74(D)mm

ED-7271-19
RFID Reader Module
- CPU: ATmega128
- Operation Voltage: 5V
- Frequency: 13.56MHz
- TAG Protocol: ISO/IEC 14443 A/B Standards
- Operation Range: Up to 3cm
- Interface: Serial Sensor Network (10Pin Plat Cable)
- Dimension: 80(W) x 51(H) x 105(D)mm

ED-7271-21
Voice Recognition & Synthesis
- CPU: S3C2440(400MHz)
- Operation Voltage: 5V
- MIC: ø6, Sensitivity (-33dB)
- Speaker: Oval type (ø5 x 20mm), Rated Power(1W)
- Interface: Serial Sensor Network (10Pin Plat Cable)
- Voice Recognition: Speaker Independent, Max. 100 words (max.16 characters)
- Voice Synthesis: Text to Speech, Max. 100 characters
- Detect Voice Direction: Detection Range (±80°), Resolution (15°)
- Dimension: 70(W) x 48(H) x 140(D)mm

ED-7271-10
Image Sensor
- CCD Camera: 1/4” Color VGA CMOS Image Sensor, 31k pixel, Angle 52 degree
- Image Processing: Capable of color recognition and distance detection
- Target Panel: Circle, triangle, square, left, right, up
- Operating Voltage: 5V
- Interface: USB
- Dimension: 80(W) x 40(H) x 105(D)mm
Application Module (4EA)

**ED-7271-2**
Inclination Sensor : 1EA
- Output Range : 0–10 Level Light
- Operating Voltage : 5V
- Interface : Serial Sensor Network (10-pin flat cable)
- Dimension : 60(W) x 72(H) x 92(D)mm

**ED-7271-11**
Slide Module : 1EA
- Measurement Range : 0 to 300mm
- Dimension : 90(W) x 40(H) x 302(D)mm

**ED-7271-16**
Bi-Directional Module : 1EA
- Driver Type : Bi-Directional
- Gear Type : Straight Bevel Gear
- Interface : Timing Pulley (ø65)
- Dimension : 128(W) x 86(H) x 166(D)mm

**ED-7271-17**
Panel Fixation Module : 1EA
- Target Panel : Circle, triangle, square, left, right, up
- Panel Dimension : 110(W) x 1(H) x 100(D)mm
- Module Dimension : 80(W) x 40(H) x 105(D)mm

Application Software
- Program : Flow Chart Based Application S/W
- OS Environment : Windows 2000, XP