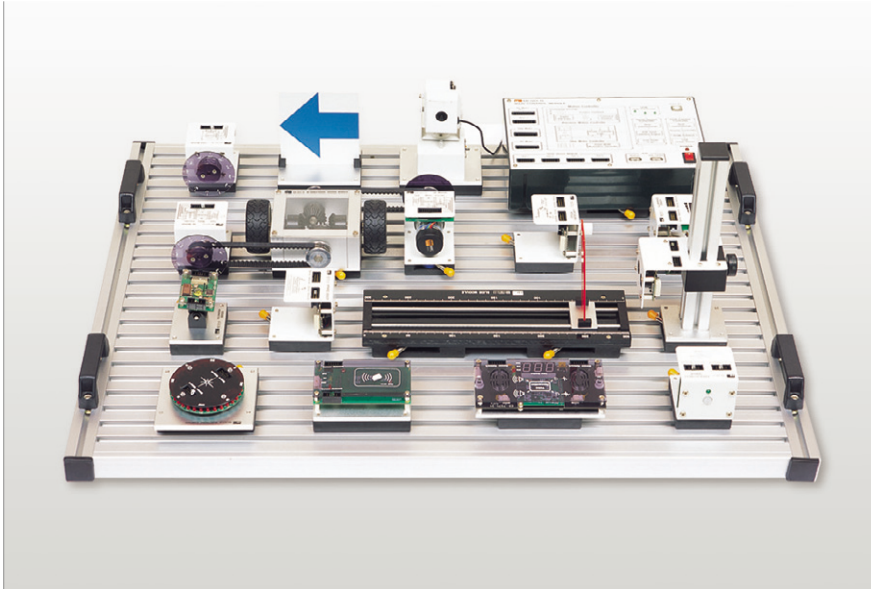


## • Intelligent Robot

# ROBOT ASSEMBLY KIT TRAINER

# ED-7271

- 10 types of sensors, 3 types of actuator 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
- Application experiment using MSRDS(Microsoft Robotics Developer Studio)



## > 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)
- **Actuator Module(3types) : 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

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- **Sensor Module(10 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
  - » Pyroelectric Sensor : Judges the presence of a human
  - » Illumination Sensor : Measures the light's brightness
  - » Image Sensor : Judges the predefined object and measures its distance
  - » Touch & Bumper Sensor : Detects the touch of human being and objects

- » RFID Reader Module : Application of recognition for RFID Tag
- » Voice Recognition & Synthesis Module : Voice recognition for Robot, out of Synthesis speech and application of detect the direction of sound
- **Application Module(4types) : 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  $\pm 45^\circ$
  - » Electronic Compass :  $0 \sim 359.9^\circ$  with  $0.1^\circ$  resolution
  - » Voice Recognition : Max. 10 words(user define)
  - » Voice Direction check : Four directions by LED Indicator
  - » Pyroelectric Infrared : distance : 5meter,  $119^\circ \times 38^\circ$
  - » Ultrasonic : Frequency : 40kHz  
Detectable : 10cm to 4meter
  - » 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

### ACCESSORIES

- Flowchart Based Application Software(IRES)
- OS Environment : Windows 2000, XP
- Operation Manual : 1ea
- USB Cable : 1ea
- Timing Belt : 3ea
- AC cord : 1ea
- Image Target Panel : 6types
- Dusty Cover : 1ea
- Working Board : 800(W) x 610(H)mm

### OPTIONS

- ED-7271-18 Touch & Bumper Sensor : 1ea
- ED-7271-19 RFID Reader Module with 13.56MHz RFID Tag(2ea) : 1set

## Main Control Module(1EA)



## ED-7271-15

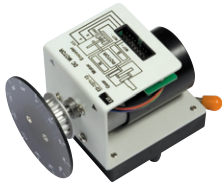
- Interface : USB 2.0 High Speed(including USB 2.0 hub)
- Support Function : DC Motor Control(2 Slot), RC Motor Control, Step Motor Control, Serial Sensor Network (4 Slot)
- Operating Voltage : 12V/5A, 5V/3A
- Certification : EMI/EMC with AC Power
- Dimension : 166(W) x 86(H) x 248(D)mm

## Actuator Module(3EA)



**ED-7271-10**  
RC Motor  
Module(Pan/Tilt) :  
1EA

- Operation Voltage : 5V
- Rated Torque : 4.1kg·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(10EA)



**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

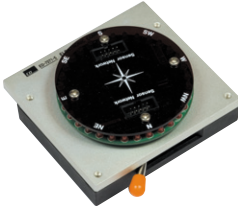


**ED-7271-4**  
Infrared Distance  
Sensor :  
1EA

- 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

# ROBOT ASSEMBLY KIT TRAINER

# ED-7271



**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



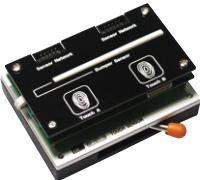
**ED-7271-6**  
**Inclination Sensor :**  
**1EA**

- Measurement : X, Y Axis  $\pm 45^\circ$
- 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-7271-18**  
**Touch & Bumper**  
**Sensor : 1EA(Optional)**

- Operating Voltage : 5V
- Capacitive Sensing : 2 Point
- Tape Switch : 1 Point
- Interface : Serial Sensor Network(10Pin Plat Cable)
- Dimension : 60(W) x 50(H) x 70(D)mm



**ED-7271-19**  
**RFID Reader Module :**  
**1EA(Optional)**

- 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 : 1EA**

- CPU : S3C2440(400MHz)
- Operation Voltage : 5V
- MIC :  $\varnothing 6$ , Sensitivity(-33dB)
- Speaker : Oval type(35 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(1800), Resolution(15°)
- Dimension : 70(W) x 48(H) x 140(D)mm

# ROBOT ASSEMBLY KIT TRAINER

# ED-7271



## ED-7271-10 Image Sensor

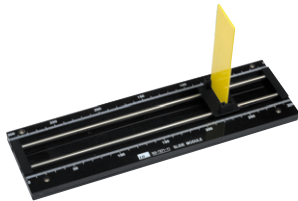
- CCD Camera :  $\frac{1}{4}$ " Color VGA CMOS Image Sensor, 31k pixel, Angle 52 degree
- Image Processing : Capable of color recognition and distance detection
- Target Panel : Circle, triangle, square, left, right, up
- Operating Voltage : 5V
- Interface : USB
- Dimension : 80(W) x 40(H) x 105(D)mm

## Application Module (4EA)



## ED-7271-2 Light 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



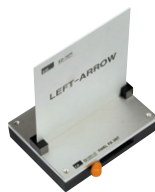
## ED-7271-11 Slide Module : 1EA

- Measurement Range : 0 to 300mm
- Dimension : 90(W) x 40(H) x 302(D)mm



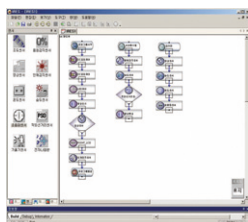
## ED-7271-16 Bi-Directional Module : 1EA

- 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