



## Sensing and Motion System(Core Version)

- [P/N: DSK8125]

This electronic combo kit contains the core electronic modules. This system is an ideal starting system for constructing complicate mobile robot. You could choose and add wireless modules, sensor and sensor modules according to your project requirement at later time.

The embedded firmware has been pre-loaded and PC software is also included.

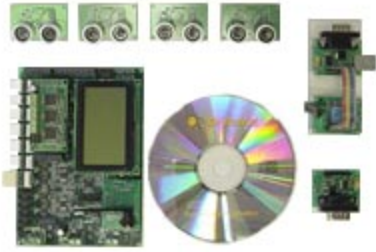
### Included Main Modules:

PMS5005	Robot Sensing and Motion Controller	1
MDM5253	DC Motor Driver Module with Position and Current Feedback	1
DUR5200	Ultrasonic Range Sensor Module	4
MCR3210	RS232 Interface Module	1
CCR2150	RS232 Cross-over Serial Cable	1
MGL5128	128x64 Graphic LCD Module	1



**ADVANCE MICROLINK SDN BHD**

Tel : 603-62771012 Fax : 603-62779011 email : [sales@amlsb.com](mailto:sales@amlsb.com), <http://www.amlsb.com>



## Wireless Sensing and Motion System (Core Version)

- [P/N: DSK8126]

This electronic combo kit contains the core electronic modules in building robots. This system is an ideal starting system for constructing a wireless mobile robot. You could choose and add sensor and sensor modules according to your project requirement at later time.

The embedded firmware has been pre-loaded and PC software is also included.

### Included Main Modules:

PMS5005	Robot Sensing and Motion Controller	1
MDM5253	DC Motor Driver Module with Position and Current Feedback	1
DUR5200	Ultrasonic Range Sensor Module	4
MCB3100	Serial Bluetooth Wireless Module	2
MCR3210P	RS232 Interface Module with power connector	1
MCR3210	RS232 Interface Module	1
CCR2150	RS232 Cross-over Serial Cable	1
MGL5128	128x64 Graphic LCD Module	1





## Sensing and Motion System (Extreme Version)

- [P/N: DSK8127]

This electronic combo kit contains most of the electronic modules and cable to construct a complicate mobile robot such as the DRK6000 WiRobot Mobile Vehicle.

The embedded firmware has been pre-loaded and PC software is also included.

### Included Main Modules:

PMS5005	Robot Sensing and Motion Controller	1
MDM5253	DC Motor Driver Module with Position and Current Feedback	2
DUR5200	Ultrasonic Range Sensor Module	6
DHM5150	Pyroelectric Human Motion Sensor Module	2
DTA5102	Tilt/Acceleration Sensor Module	1
DAT5280	Ambient Temperature Sensor Module	1
GP2Y0A21YK	Sharp IR Distance Measuring Sensor	1
MCR3210	RS232 Interface Module	1
MIR5538	38KHz Infrared Remote Controller Module	1
DIR5538	38KHz Infrared Remote Controller	1
CCR2150	RS232 Cross-over Serial Cable	1
MGL5128	128x64 Graphic LCD Module	1



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## Wireless Sensing and Motion System (Extreme Version)

- [P/N: DSK8128]

This electronic combo kit contains all the electronic modules and cable to construct complicate wireless mobile robot such as the WiRobot Mobile System.

The embedded firmware has been pre-loaded and PC software is also included.

### Included Main Modules:

PMS5005	Robot Sensing and Motion Controller	1
MDM5253	DC Motor Driver Module with Position and Current Feedback	2
DUR5200	Ultrasonic Range Sensor Module	6
DHM5150	Pyroelectric Human Motion Sensor Module	2
DTA5102	Tilt/Acceleration Sensor Module	1
DAT5280	Ambient Temperature Sensor Module	1
GP2Y0A21YK	Sharp IR Distance Measuring Sensor	1
MCB3100	Serial Bluetooth Wireless Module	2
MCR3210P	RS232 Interface Module with power connector	1
MCR3210	RS232 Interface Module	1
MIR5538	38KHz Infrared Remote Controller Module	1
DIR5538	38KHz Infrared Remote Controller	1
CCR2150	RS232 Cross-over Serial Cable	1
MGL5128	128x64 Graphic LCD Module	1



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## Multimedia-Sensing-Motion System (Bluetooth Wireless Extreme Version)

- [P/N: DSK8208]

This electronic combo kit contains all the electronic modules and cable to construct complicate wireless mobile multimedia robot such as the WiRobot Mobile Head. It comes with WiRobot Multimedia Controller, Sensing-Motion controller, wireless module pair, camera module, audio module, 2 motor driver boards, 6 sonar sensor modules, 2 human detector modules, tilt/acceleration module, IR range detector, IR remote control, temperature sensing module, force sensors, general purpose amplifier, Graphic LCD Module, cables and etc.

All the embedded firmware for both controllers has been pre-loaded and PC software is also included.

Battery, servo and mechanical system for building the WiRobot Mobile Head are not included.

### Included Main Modules:

PMB5010	Robot Multimedia Controller	1
PMS5005	Robot Sensing and Motion Controller	1
MDM5253	DC Motor Drive with Position and Current Feedback Module	2
DUR5200	Ultrasonic Range Detector	6
DHM5150	Pyroelectric Human Motion Detector	2
DTA5102	Two-Axis Tilt and Acceleration Sensor Module	1
DAT5280	Ambient Temperature Detector	1
GP2Y0A21YK	Sharp IR Distance Measuring Sensor	1
FSR400	Force Sensing Resistor (5 piece pack)	1
MRS3302	Rotary Sensor Module (2 piece pack)	2
MSA3502	Two-channel General-purpose Signal Amplifier Module	2
MCB3100	Serial Bluetooth Wireless Module	2
MCR3210	RS232 Interface Module	1



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MCR3210P	RS232 Interface Module with power connector	1
MIR5538	38KHz Infrared Remote Controller Module	1
DIR5538	38KHz Infrared Remote Controller	1
MCI3908	Color Image Module with Camera	1
MAC5310	Audio Codec and Audio Power Amplifier Module	1
BAS8100	8 Ohm 1W Speaker	1
SAM5247	Mini Omni-directional Microphone	1
MGL5128	128x64 Graphic LCD Module	1





## Multimedia-Sensing-Motion System (WiFi 802.11b Wireless Extreme Version)

- [P/N: DSK8218]

This electronic combo kit contains all the electronic modules and cable to construct complicate WiFi 802.11b wireless mobile multimedia robot such as the WiRobot Mobile Head. It comes with WiRobot Multimedia Controller, Sensing-Motion controller, WiFi wireless module, camera module, audio module, 2 motor driver boards, 6 sonar sensor modules, 2 human detector modules, tilt/acceleration module, IR range detector, 2 Optical Encoder, 2 DC motor, temperature sensing module, force sensors, Graphic LCD Module, cables and etc.

All the embedded firmware for both controllers has been pre-loaded and PC software is also included.

Battery, servo and mechanical system for building the WiRobot Mobile Head are not included.

### Included Main Modules:

PMB5010	Robot Multimedia Controller	1
PMS5005	Robot Sensing and Motion Controller	1
MDM5253	DC Motor Drive with Position and Current Feedback Module	2
DUR5200	Ultrasonic Range Detector	6
DHM5150	Pyroelectric Human Motion Detector	2
DTA5102	Two-Axis Tilt and Acceleration Sensor Module	1
DAT5280	Ambient Temperature Detector	1
GP2Y0A21YK	Sharp IR Distance Measuring Sensor	1
FSR400	Force Sensing Resistor (5 piece pack)	1
N/A	Optical Encoder	2
MOT120R	DC 12V 50:1 Gearhead Motor	2
WFS802b	WiFi 802.11b serial module with antenna	1
MCR3210P	RS232 Interface Module with power connector	1



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MIR5538	38KHz Infrared Remote Controller Module	1
DIR5538	38KHz Infrared Remote Controller	1
MCI3908	Color Image Module with Camera	1
MAC5310	Audio Codec and Audio Power Amplifier Module	1
BAS8100	8 Ohm 1W Speaker	1
SAM5247	Mini Omni-directional Microphone	1
MGL5128	128x64 Graphic LCD Module	1



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## Robot Multimedia Controller - [P/N: PMB5010]



The PMB5010 Robot Multimedia Controller can be used as audio, video, LCD display and wireless communication processing unit for robotic applications. Its onboard firmware makes the low level function modules such as audio module and image module transparent to the users. A host (e.g. PC, DSP, or processor) will be used to communicate and control the PMS5005 for different applications through the UART (serial) interface. The system can help robotic and AI researchers and developers focus on the high level scheme and algorithm design, and avoid the hassle of writing low level device drivers and troubleshooting the electronic circuits. The ease of use, powerful functionality and onboard intelligence can eliminate design risk, streamline hardware and software development, and significantly shorten the time to delivery while effectively reducing the cost.

Note that MCR3210 (RS232 Interface Module) and CCR2150 (RS232 Cross-over Serial Cable) are required for wired connection of PMB5010 to PC or to devices with RS232 serial communication port.

### Features:

- 120MIPS 16-bit fix-point DSP
- 1M x 16-bit words flash
- Up to 256K x 16-bit words SRAM
- Build-in
  - Real-time clock
  - full duplex UART (x2)
- Embedded firmware for image capturing, audio recording and playback, LCD graphic display, and wired and wireless communication
- Interfaces to



- Digital inputs for on/off signals (x4)
- Parallel expansion port for sensing and control (Reserved)
- MAC5310 Audio codec and amplifier module (x1)
- MCI3908 CMOS image sensor module (x1)
- MGL5128 Graphic LCD display module (x1)
- PMS5005 Sensing and motion controller (x1)
- MCB3100 Serial Bluetooth wireless module or MCR3210 RS232 interface module (x1)





## Robot Sensing and Motion Controller - [P/N: PMS5005]

The PMS5005 Robot Sensing/Motion Controller can be used as sensing, control, motion execution, LCD display and wireless communication processing unit for various robotic applications. Its onboard firmware makes the low level function modules such as motor driver module and wireless communication module transparent to the users. The PMS5005 board by itself can already drive 6 standard RC servo motors and support multiple I/Os. A host (e.g. PC, DSP, or processor) will be used to communicate and control the PMS5005 for different applications through the UART (serial) interface. The system can help robotic and AI researchers and developers focus on the high level logic and algorithm design, and avoid the hassle of writing low level device drivers, standard control schemes and troubleshooting the electronic circuits. The ease of use, powerful functionality and onboard intelligence can eliminate design risk, streamline hardware and software development, and significantly shorten the time to delivery while effectively reducing the cost.

Note that MCR3210 (RS232 Interface Module) and CCR2150 (RS232 Cross-over Serial Cable) are required for wired connection of PMS5005 to PC or to devices with RS232 serial communication port.

### Features:

- 40MIPS 16-bit fix-point hybrid DSP/MCU
- 36K x 16-bit words flash
- 2.5K x 16-bit words SRAM
- Built-in
  - A/D reference voltage monitoring
  - Over-heating sensor (x2)
  - System voltage monitoring (x1)
  - Watchdog timer (x1)



- Full duplex UART (x2)
- Embedded firmware for configurable closed loop position, velocity, various sensor data acquisition, LCD graphic display, wired and wireless communication
- Interface to
  - MDM5253 DC motor driver module with position and current feedback (x2), which includes general-purpose PWM DC motor interface (x6), motor current feedback interface (x6) and potentiometer position feedback sensor interface (x6)
  - Quadrature encoder (x2)
  - Standard RC servo motor, e.g. Hitec HS-322HD (x6)
  - DUR5200 Ultrasonic sensor module (x6)
  - DHM5150 Human sensor module (x2)
  - DAT5280 Ambient temperature sensor module (x1)
  - GP2Y0A21YK Infrared range sensor (x1)
  - DTA5102 2 axis tilt/acceleration sensor module (x1)
  - Custom A/D (x8 including 3 channels of optional battery voltage monitoring). It can connect to MSA3502 if signal amplifying is needed.
  - Custom digital input (x8)
  - Custom digital output (x8)
  - MGL5128 Graphic LCD display module (x1)
  - MIR5538 Full duplex infrared remote control and communication interface (x1)
  - PMB5010 Multimedia controller (x1)
  - MCB3100 Serial Bluetooth wireless module or MCR3210 RS232 interface module (x1)

