Getting Started with a PC

1 Install WinAVR from the Command Module product CD

2 Power on iRobot Create, plug the Command Module into the robot's Cargo Bay Connector, and connect the USB cable from your PC to the Command Module.

3 Install the USB drivers (there are 2 that need to be installed) using the Found New Hardware Wizard or the installation executable on the Command Module product CD

4 Set the USB serial port to COM9 (open the Properties for the port from the Device Manager and change the com port using the Advanced button in the Port Settings tab)

Creating and Loading a New Project

1 Open WinAVR

2 Create a new project and add the source files (e.g. input.c, oi.h and makefile from the input example program on the product CD)

3 Compile the project using Tools->[WinAVR] Make All

4 Connect the Command Module to iRobot Create and connect the USB cable from your PC to the Command Module

5 Press Reset on the Command Module

6 Download the project using Tools->[WinAVR] Program

For the full set of instructions on setting up and using your Command Module visit **www.irobot.com/create** to download the Command Module Owner's Manual.

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iRobot® Create™ Accessories

Register your iRobot® Command Module today and SAVE 15% on all accessories.*

Virtual Wall®
IR transmitter conveniently placed at robot eye-level. Can be used as an invisible wall or beacon

Home Base™
Recharges the iRobot rechargeable battery while in iRobot Create. Also contains 3 IR transmitters

iRobot Rechargeable Battery
Rechargeable battery and charger for the iRobot Create

Standard Remote
Allows you to control iRobot Create from a distance

For more accessories and ordering information go to **www.irobot.com** or call **800.727.9077**.

*See registration card for details. Availability subject to change. Shipping and handling not included.
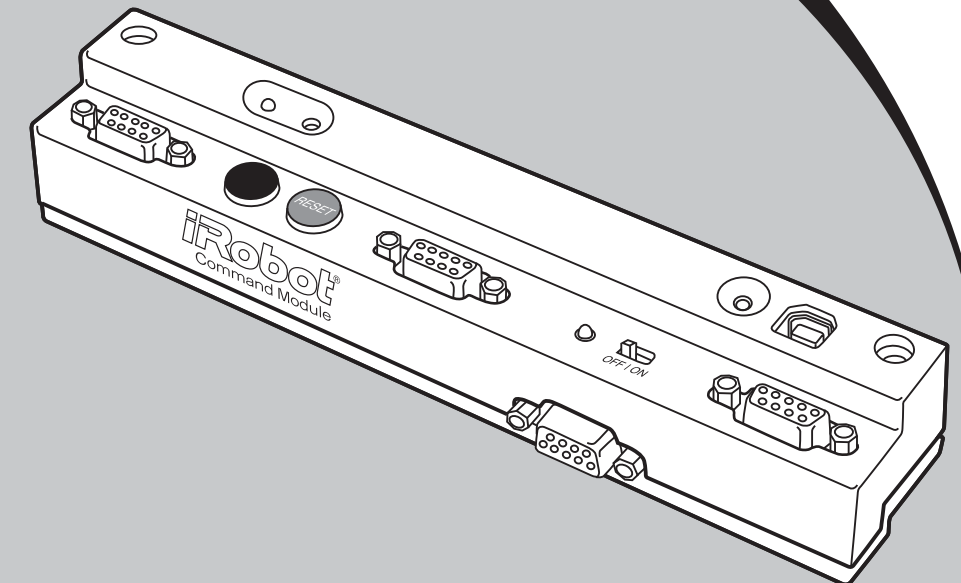
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iRobot® Command Module
QUICK START GUIDE

An easy step-by-step guide and reference card for using the iRobot Command Module with your iRobot Create.™

SAVE 15%
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Introduction

With the iRobot Command Module, you can control iRobot Create with programs you write in C or C++. And when you add custom hardware to the Command Module and iRobot Create, you can invent almost any kind of robot you want.

The Command Module plugs into iRobot Create's Cargo Bay connector and screws down for a secure connection. Its four DB-9 expansion ports (ePorts) make adding your own sensors, lights, and motors inexpensive and easy. For more detail, download the Command Module Owner's Manual at www.irobot.com/create.

With the programs you write, you can control iRobot Create's motors, lights, and songs and read its sensors using the robot's Open Interface serial protocol (details are in the iRobot Create Owner's Manual and online at www.irobot.com/create). You can also control and read your own custom sensors, buttons, LEDs, and motors when you connect them to the Command Module's expansion ports. Once you write your programs, they are easy to download to the Command Module's microcontroller.

Start with one of the example programs; expand and change it as you wish. For more information on writing software for the Command Module see the Software Reference chapter in the Command Module Owner's Manual and the Open Interface reference guide.
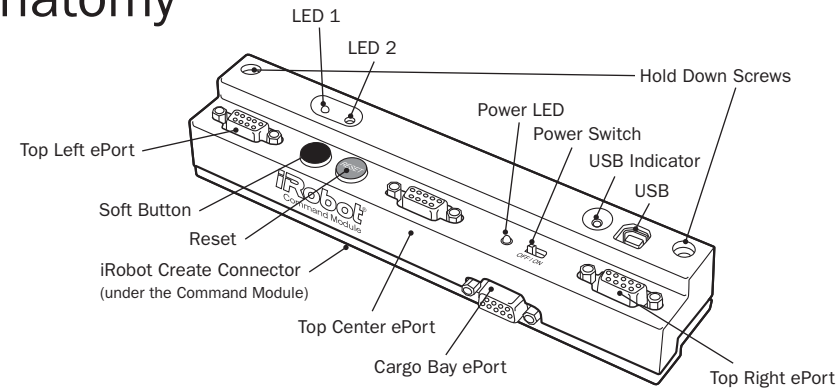
What's included:
iRobot Command Module
USB Cable
iRobot Command Module CD that includes:

- WinAVR install
- USB Driver install
- Example programs
- Atmel AVR ATmega168 microcontroller data sheet

For more details on your iRobot Command Module and to download the Owner's Manual, visit **www.irobot.com/create**.

Anatomy

The tables below show the signal connections for the each of the ePorts. The four ePorts have similar electrical connections, allowing add-on modules to be installed in different ePorts depending upon your needs.

Top Left ePort

Pin#	Description	Name
1	Analog Input 7	ADC7
2	Digital I/O (Port C pin 3) or Analog Input 4	PC3/ADC4
3	Digital I/O (Port B pin 3)	PB3
4	Regulated 5V voltage (when iRobot Create is on)	Vcc
5	iRobot Create Battery Ground	Gnd
6	Not Connected	NC
7	iRobot Create Battery Voltage (when iRobot Create is on)	Vpwr
8	Not Connected	NC
9	Low Side Driver 0	LD0

Top Right ePort

Pin#	Description	Name
1	Analog Input 6	ADC6
2	Digital I/O (Port C pin 2) or Analog Input 2	PC2/ADC2
3	Digital I/O (Port B pin 2)	PB2
4	Regulated 5V voltage (when iRobot Create is on)	Vcc
5	iRobot Create Battery Ground	Gnd
6	Not Connected	NC
7	iRobot Create Battery Voltage (when iRobot Create is on)	Vpwr
8	Not Connected	NC
9	Low Side Driver 0	LD0

Top Center ePort

Pin#	Description	Name
1	Digital I/O (Port C pin 5) or Analog Input 5	PC5/ADC5
2	Digital I/O (Port C pin 1) or Analog Input 1	PC1/ADC1
3	Digital I/O (Port B pin 1)	PB1
4	Regulated 5V voltage (when iRobot Create is on)	Vcc
5	iRobot Create Battery Ground	Gnd
6	Not Connected	NC
7	iRobot Create Battery Voltage (when iRobot Create is on)	Vpwr
8	Not Connected	NC
9	Low Side Driver 0	LD0

Cargo Bay ePort

Pin#	Description	Name
1	Digital I/O (Port C pin 4) or Analog Input 4	PC4/ADC4
2	Digital I/O (Port C pin 0) or Analog Input 0	PC0/ADC0
3	Digital I/O (Port B pin 0)	PB0
4	Regulated 5V voltage (when iRobot Create is on)	Vcc
5	iRobot Create Battery Ground	Gnd
6	Not Connected	NC
7	iRobot Create Battery Voltage (when iRobot Create is on)	Vpwr
8	Low Side Driver 1	LD1
9	Low Side Driver 2	LD2

Processor I/O Pins

The Command Module's Atmel AVR ATmega 168 microcontroller has 23 I/O pins, arranged into 3 ports (B, C and D), plus 2 additional analog input pins. The table below gives a description of each pin along with the location of the hardware to which it is connected. For information on how to control and read from these pins, see the Command Module Owner's Manual.

Pin Name	Description	Location
PB0	Digital I/O	Cargo Bay ePort pin 3
PB1	Digital I/O	Top Center ePort pin 3
PB2	Digital I/O	Top Right ePort pin 2
PB3	Digital I/O	Top Left ePort pin 3
PB4	Serial port connector select. 1 = USB port. 0 = iRobot Create	Internal
PB5	iRobot Create Power Detect. High if iRobot Create is on.	iRobot Create connector pins 10-13
PB6	Clock line	Internal Use only
PB7	Clock line	Internal Use only
PC0	Digital I/O or Analog Input	Cargo Bay ePort pin 2
PC1	Digital I/O or Analog Input	Top Center ePort pin 2
PC2	Digital I/O or Analog Input	Top Right ePort pin 2
PC3	Digital I/O or Analog Input	Top Left ePort pin 2
PC4	Digital I/O or Analog Input	Cargo Bay ePort pin 1
PC5	Digital I/O or Analog Input	Top Center ePort pin 2
PC6	Reset Line	Internal Use only
PD0	Serial Rx	iRobot Create connector pin 2 or USB
PD1	Serial Tx	iRobot Create connector pin 1 or USB
PD2	iRobot Create Device Detect Input	iRobot Create connector pin 15
PD3	USB Detect	USB port
PD4	Command Module Soft Button	Left button
PD5	Command Module LED 1	Left green LED
PD6	Command Module LED 2	Right green LED
PD7	iRobot Create Power Toggle (on rising edge)	iRobot Create connector pin 3
ADC6	Analog Input	Top Right ePort pin 1
ADC7	Analog Input	Top Left ePort pin 1

System Requirements:
Windows XP*
USB connection

*Support for additional operating systems may be available at **www.irobot.com/create**.