

# VRC easyC Programming Guide

## Using easyC for Autonomous Competition Robots

1. Install or Upgrade to easyC version 2 or easyC Pro
2. Update VEX controller Master Code to Version 7 or newer
3. Open the correct easyC VRC Competition Template (see below)
4. Begin Programming

## Purchasing easyC Version 2

easyC version 2 is available for purchase from [www.vexrobotics.com](http://www.vexrobotics.com) under “Programming”.

## Upgrading easyC to Version 2

easyC version 2 is an upgrade to version 1.1. A copy of easyC V1.1 must be installed before the version 2 upgrade can be installed. A trial version of easyC Version 2 can be downloaded from

<http://www.intelitekdownloads.com/easyCV2/>

(Note: this address is case-sensitive!)

## Using easyC

easyC has many of features that will enhance your programming experience. All the features are outlined in the easyC help file. Six new advanced tutorials have also been added to the Getting Started portion of the help file. These tutorials show students examples of how some of the new easyC features can be used. If you complete the tutorials you will gain a basic understanding of:

- Line Following
- User Functions
- Global Variables and Constants
- Libraries
- Competition Templates

There are also several new sample project included with easyC to show how some of the features can be used. Please refer to the help file first for all your questions. If you need further assistance, please consult our official technical support forum at [www.vexforum.com](http://www.vexforum.com) or email us your questions to [support@intelitek.com](mailto:support@intelitek.com).

*Troubleshooting - A common problem is related to the settings in the VEX transmitter. Please verify that the Drive option in the transmitter is set to 23 mode whenever you are using an RX command in your easyC project!*

## **VEX Robotics Competition**

The VEX Robotics Competition has three different challenges. In addition to the head-to-head VEX Robotics Competition Tournament, there is also a Programming Skills Challenge and a Robot Skills Challenge. The timing of the match varies for each of these:

1. The Tournament has 20 seconds of autonomous followed by 2 minutes of operator control.
2. The Programming Skills Challenge is 60 seconds of autonomous *only*.
3. The Robot Skills Challenge is 60 seconds of operator control *only*.

## **Competition Templates**

A “Competition Template” provides a standardized platform for teams to use when competing in an event. The template has two sections, one for your Autonomous program and one for your Operator Control program. The template controls the duration of each of these matches and allows the competition field to begin each match. These templates must be placed in the easyC templates folder to function correctly. There are pre-defined competition templates available in easyC for use in all three of these VEX Robotics Competition Challenges:

1. “VRC Tournament Template.ECT”
2. “VRC Programming Skills Challenge Template.ECT”
3. “VRC Robot Skills Challenge Template.ECT”
- 4.

*Note: When using the “VRC Tournament Template.ECT” a jumper clip installed in interrupt 5 on the VEX Microcontroller will run only the autonomous segment of your code. A jumper clip installed in interrupt 6 on the VEX Microcontroller will run only the operator control segment of your code. If no jumper clip is installed, the autonomous portion of your code will run first and followed by the operator control segment of your code.*

## **To Open a Competition Template:**

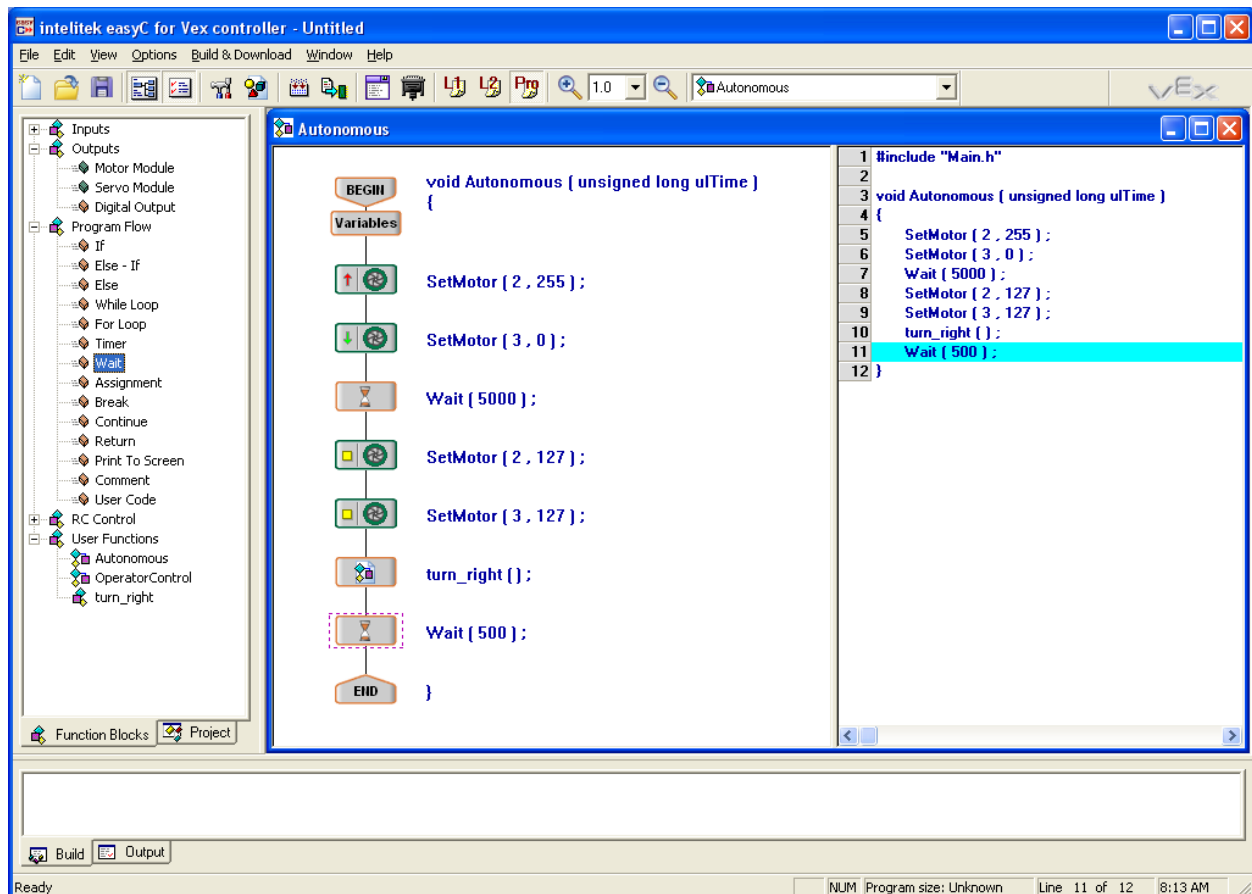
1. Place the templates for easyC in the easyC Templates folder!
2. Go to File, and Select Open Project.
3. Change the 'Files of Type' from easyC Project to easyC Template using the drop down menu. The window will automatically display the default directory for Templates.
4. Select the correct easyC Competition template depending on what you are programming:
  - a. “VRC Tournament Template.ECT”
  - b. “VRC Programming Skills Challenge Template.ECT”
  - c. “VRC Robot Skills Challenge Template.ECT”
5. Select Open

The Main Function will be displayed with two Function Blocks already defined. These Function Blocks refer to user functions that have also been pre-defined for your use. The numbers in parentheses indicate the length of time of each period (in seconds). Depending on the template used these functions will vary.

**Make sure you use the correct template for the competition you are competing in!**

## Autonomous Mode

During the Autonomous Mode, the robot will move independently of operator controls for the prescribed length of time. The Autonomous period will begin when your robot first sees a signal from your transmitter or the competition field. This is unlike a regular easyC project that would begin as soon as the robot's controller is turned on. Your robot will execute commands in the Autonomous section of your program until the time period elapses. During the autonomous portion of the template, any signals from the transmitters are ignored. This means that switching off your radio controller WILL NOT deactivate the Autonomous period or your robot. The orange eye on the controller will blink when the controller is in Autonomous Mode.

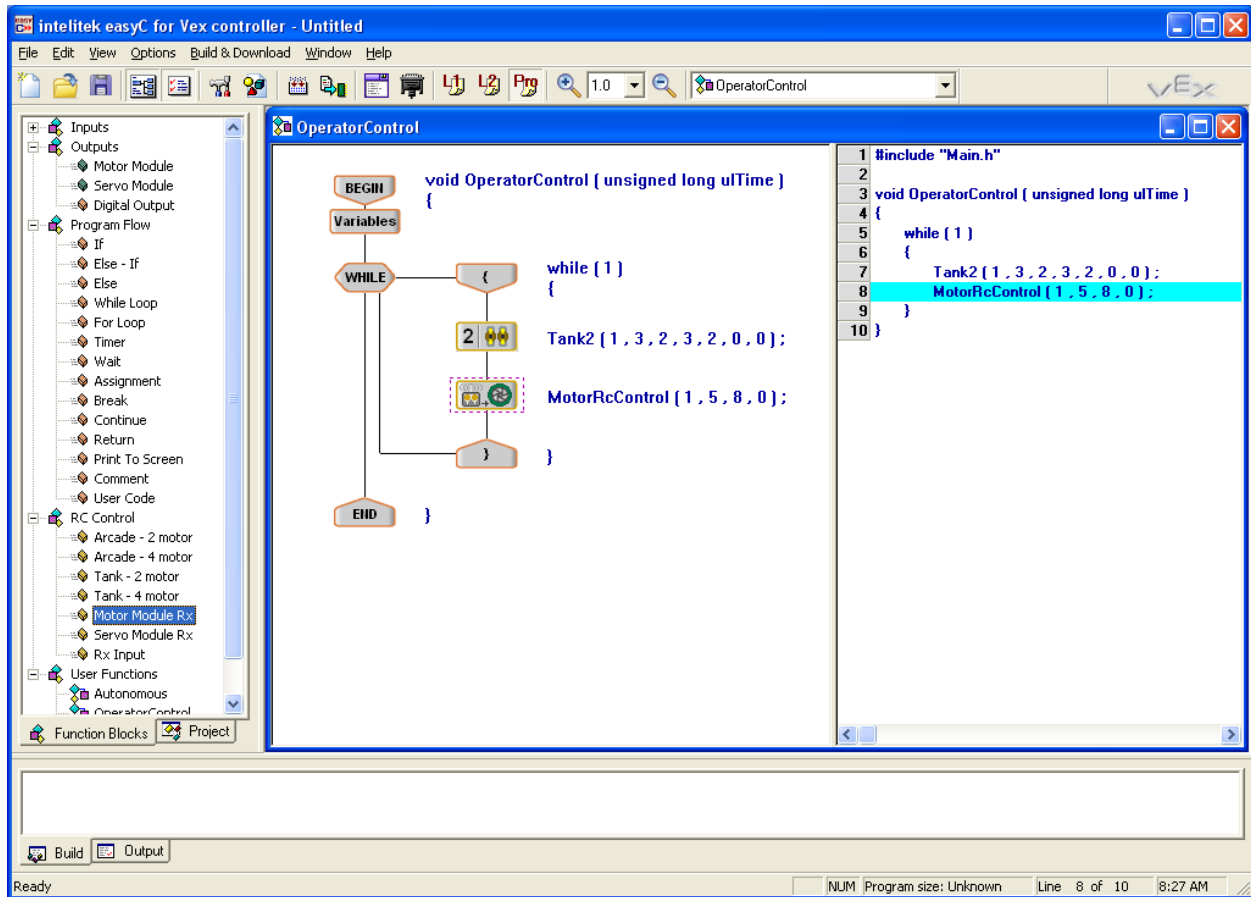


**Note:** When using the "VRC Tournament Template.ECT" a jumper clip must be placed in interrupt 5 to run **ONLY** the Autonomous portion of your program.

**NO** jumper is required when you are using the "VRC Programming Skills Challenge Template.ECT".

## Operator Controlled Mode

Programming in the Operator Controlled Mode is very similar to programming in a normal project. The OperatorControl function of the template does not contain any predefined instructions; in fact the template is completely blank at the start just like the Autonomous function. However, you have the ability to communicate with your transmitter during the Operator Control period. You may add blocks from the RC Control group to control your robot. Switching off your transmitter during the Operator Controlled period will stop your robot. If you turn your transmitter back on, your robot program will continue to execute until the allotted time expires. At the end of the allotted Operator Controlled period, your robot's program will stop automatically. The competition field will control the 2-minute duration of the Operator Control match.



***Note: When using the “VRC Tournament Template.ECT” a jumper clip must be placed in interrupt 6 to run ONLY the Operator Control portion of your program. NO jumper is required when you are using the “VRC Robot Skills Challenge Template.ECT”.***

### **On field robot testing:**

When you place your robot on the field for a VEX Robotics Competition Tournament match, you will be asked to verify your robot and transmitter are functioning properly. This is simply done by turning on your transmitter and moving your robot. Once this test is complete, your transmitter will be disabled until the start of the match.

**You must turn off your robot controller and turn it back on to reinitialize the template before the start of the match.**