



4 Day basic programming course

Day 1

- Introduction
- Documentation
- Presentation Of the IRC5 Robot System
- Introduction To Virtual IRC5 & Robot Studio
- Manual Operations
- Jogging Window, Quick set menu (multi Move)
- Coordinate Systems
- I/O Window
- Programming editor, (Multitasking)
- System Events, log files
- RAPID Programming overview & Principles
- RAPID Programming Structure
- Tool data & WorkObjects

Day 2

- Review of Day 1
- Safety
- Modules, Routines, Inst, Data
- RAPID Basic Instructions
- MoveJ, MoveL, MoveC
- Set, Reset, SetDO
- ProcCall,
- Wait instructions
- Definition of Tool, Load data, Mass, COG and TCP, LoadIdentify
- Backup/Restore



Day 3

- Review of Day 2
- Program Flow Control
- Looping, If then Else, For, While
- User Communication
- Program Data Types and Declarations
- Const, Variable, Persistent
- Programming Guidelines
- Exercise 5
- Functions
- ClockRead, Offset, RelTool
- Exercise 6

Day 4

- Review of Day 3
- Function CrobT
- Motion Set Instructions
- Exercise 7
- TriggL, TriggC, TriggIO Instructions
- Check Calibration and update rev counter
- Finish exercises and assessments
- Conclusion



Outcomes

- Identify and explain the types of ABB standard robot manuals available
- Identify and describe controller and manipulator Type/Model including serial no
- Identify and describe basic hardware components of robotics system using appropriate terminology
- Identify and describe basic software components of robotics system using appropriate terminology
- Demonstrate the proper start-up and shut down of the robot system
- Identify and describe manipulator structure using correct terminology
- Describe and Explain the info on the Status bar
- Manually jog the robot axis by axis
- Identify/describe using Incremental movement
- Manually jog the robot in linear mode using the 4 coordinate systems available in the standard robot system
- Identify/describe and demonstrate use of Jogging Window
- Identify and describe Singularity and how to avoid issues
- Identify and describe Motion Supervision/Collision detection functionality
- Identify and describe the Align feature
- Identify/describe and demonstrate/operate use of Inputs/Outputs Window
- Identify/describe and demonstrate setting up most common Inputs/Outputs List
- Identify/describe and demonstrate setting up programmable keys 1-4
- Identify/describe event messages and demonstrate how to check, confirm & acknowledge events (including log)
- Open/Load and Save a Program
- Start & Stop program execution both in Man and Auto mode



Outcomes

- Identify and describe the step mode in Quick set menu
- Identify and describe the speed setting in Quick set menu
- Identify/describe and demonstrate use of Quickset menu
- Identify and describe at least 3 built in safety features and functions
- Demonstrate safe working procedures for operating the robot
- Identify and describe some common safety risks operating the robot
- Identify/describe and demonstrate use of Program Editor Window
- Identify/describe and demonstrate use of Program Data Window
- Identify/describe and demonstrate use of Production Window
- Describe ABB naming guide line for RAPID data, labels and I/O signals
- Create a new Program using basic RAPID instructions and Data
- Describe/create and define a new Tool Data with appropriate, Mass, COG and TCP.
- Make modifications to program using Modify positions and or edit statements
- Execute RAPID program and or individual routines
- Describe and use the following instructions: MoveJ, MoveL Set, Reset, SetDo WaitDI WaitUntil, WaitTime,
- Describe create and use the following Data: Robtarget data, Speed data, Zone data
- Describe create and restore a backup
- Describe/create and define a new WorkObject Data
- Explain the synchronization of Move instructions and logical instructions
- Describe and explain the main ways to control Program Flow
- Describe and use the following instructions: ProcCall, IF, Compact IF, TEST
- Describe and use the following instructions: TP instructions,
- Describe/create and define a new LoadData with appropriate, Mass, COG. Describe and use LoadIdentify procedure



Outcomes

- Identify/describe and demonstrate use of Group inputs and or Group outputs
- Describe/Create, Define a Data Declaration: scope PERS, VAR, CONST
- Identify/describe and demonstrate use of features in the control panel menu
- Create a routine used to check the robot calibration
- Describe and demonstrate updating the revolution counter
- Save and Load Modules
- Save and Load System Parameters
- Identify and describe Arm configuration and how to avoid configuration errors
- Describe and use the following instructions: =:{Assign}, Clock instructions, Comment, InvertDO, PulseDO, MoveAbsj,
- Describe and explain the advanced restart modes
- Describe create and use the following Data: Jointtarget data, Num data ,Clock data, Load data
- Describe and use the following Functions: ClkRead, Offset, RelTool, Cpos, CrobT
- Describe and use the following Motion setting instructions: AccSet, PathACCLim, GripLoad, SoftAct
- Describe and use the following Motion setting instructions: MotionSup, Confl
- Describe and use the following instructions: Trigg instructions