

## Course description

# T564

## Freelance

# Advanced Configuration Controller

### Course goal

The course goal is to configure automation exercises with the examples of monitoring, open loop control and closed loop control functions. The configured functions are commissioned and tested.

### Learning objectives

Upon completion of this course the participants will be able to:

- Interpret the task management of the Freelance controllers and use the knowledge target-oriented in a project.
- Configure and commission complex control structures with Control Builder F.
- Configure and commission User defined function blocks.
- Configure and commission Sequential Function Charts (SFC).
- Transfer information across projects, using structured data types.
- Optimize a closed loop controller using self tune functionality.

### Participant profile

Freelance users who want to deepen their configuration knowledge of the Freelance controllers.

### Prerequisites

The participant knows the features of the Control Builder F project tree as well as the structure of hard- and software modules. He is well trained in configuring and commissioning basic functions.



### Topics

- Configuration of programs according to the IEC 61131-3 standard using FBAD and SFC-Editor
- Project, configuration, resources, tasks,
- Programs, function block diagrams, function blocks
- User tasks, system tasks
- Project tree, hardware specifications, project database
- Signal names and signal routing
- Complex control structures including feed forward.
- User defined function modules by FBAD
- Sequential function chart (SFC) and sequence control
- Send / receive functionality with structured data types.
- Self tune functionality
- Commissioning of programs

### Course type and methods

This is an instructor led course with interactive classroom discussions and associated lab exercises. Approximately 50% of the course is hands-on lab activities.

### Duration

The duration is 5 days.

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### Course outline

Day 1	Day 2	Day 3	Day 4	Day 5
<ul style="list-style-type: none"><li>■ Course overview.</li><li>■ Freelance System Overview.</li><li>■ Import Base Project.</li><li>■ Network Management.</li><li>■ Commissioning the Base Project.</li><li>■ Use of Control Builder F Viewer.</li></ul>	<ul style="list-style-type: none"><li>■ Control Builder F Engineering - use of system tasks.</li><li>■ Closed loop control (Level/Flow Cascade control function): Configuration &amp; commissioning.</li><li>■ Disturbance feed forward: Configuration &amp; commissioning.</li><li>■ Step controller: Configuration &amp; commissioning.</li></ul>	<ul style="list-style-type: none"><li>■ Configuration of User Function Block Types.</li><li>■ Commissioning UFB Instances.</li><li>■ Sequential Function Charts (SFC).</li><li>■ Configuration &amp; Commissioning the SFC for the automatic startup of the simulated process "Waterworks" (part 1).</li></ul>	<ul style="list-style-type: none"><li>■ Configuration &amp; Commissioning the SFC for the automatic startup of the simulated process "Waterworks" (part 2).</li><li>■ Communication across projects with Send/Receive functionality.</li><li>■ Structured Data types and their use.</li></ul>	<ul style="list-style-type: none"><li>■ Self tune functionality.</li><li>■ Optimizing a closed loop controller on a process simulation with integral behavior (controlled system without self regulation).</li><li>■ Optional: Time scheduler.</li></ul>

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