



# Training program

fpt-robots

with Selogica direct user interface

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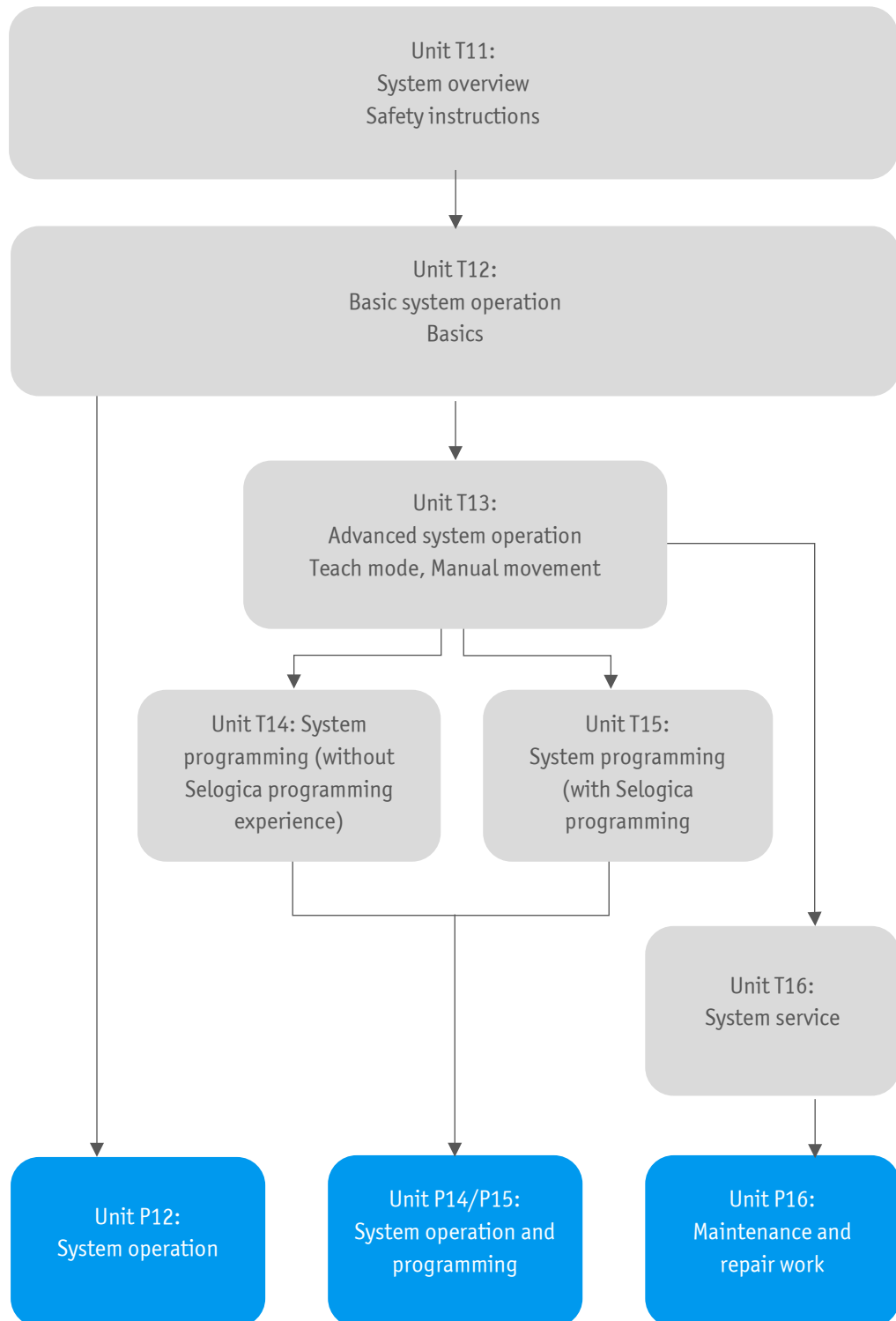
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We have checked the content of this documentation for conformity with the hardware and software described. Nevertheless, discrepancies cannot be precluded, for which reason we are not able to guarantee total conformity. However, the information in this document is checked on a regular basis and necessary corrections will be incorporated in subsequent editions.

Subject to technical alterations without an effect on the function.

<b>1. Overview training program</b>	<b>3</b>
1.1 Requirements	4
1.2 Maximum number of participants	4
1.3 Training schedule	4
1.4 Requirements to be met by the customer	5
/ Documentation folder	
/ Remote-Access	
/ System availability	
1.5 Training documents	5
1.6 Completion of a course	5
<b>2. Theoretical training units</b>	<b>6</b>
2.1 T1: System overview and Safety	6
2.2 T12/P12: Basic system operation	6
2.3 T13: Advanced system operation	7
2.4 T14/P14: System programming (without previous knowledge of Seogica)	7
2.5 T15/P15: System programming (with previous knowledge of Selogica)	8

# 1. Overview training program



The FPT seminar program includes several incremental training modules. The desired customer-specific version can be created from the available individual components. It should be noted that the respective initial prerequisites (basic modules) must also be attended.

In addition, it is possible to expand or to deepen the acquired skills through additional seminars.

## 1.1 Requiriements

In addition to the given conditions for each training block, an understanding of the German or English language is required. Other languages are available on request, each with the assistance of an interpreter.

## 1.2 Maximum number of participants

For each theoretical training unit, we suggest the number of participants not to be more than six. The maximum number of participants is limited to **eight** persons.

For each practical training unit the number of participants is limited to **four** persons.

## 1.3 Training schedule

	Morning 8:00 a.m. – 12:00 p.m.	Afternoon 1:00 p.m. – 5:00 p.m.
Day 1	System overview and safety instructions	Basic system operation
Day 2	Advanced system operation	System programming
Day 3	System programming	System programming
Day 4	System programming	System programming
Day 5	System programming	System service

## 1.4 Requirements to be met by the customer

Training facilities:

- / Room suitable for theoretical units
- / Computer projector

### **Documentation folder**

Training is conducted on the basis of the technical documentation supplied to the customer for the relevant equipment.

This documentation has to be made available by the customer for the duration of the training (in paper form).

### **Remote Access**

Over the duration of theoretical units the system has to be available via remote desktop for demonstration purposes. Production can continue as usual, with minor interruptions due to presentations of the system and its interface to the attendees.

### **System availability**

Unless agreed differently the robot system has to be fully operational and available for training purposes during every practical training unit. No production has to take place during this time.

## 1.5 Training documents

The manuals used in the training are part of a system. They are available in printed and electronic form. These are to be provided for the training period.

## 1.6 Completion of a course

Every course is completed with a final exam. Every participant receives a certificate confirming attendance or successful attendance, as applicable.

## 2. Theoretical training units

### 2.1 T1: System overview and safety – duration: 4 h

<b>Objectives</b>	Familiarization with the system and its function Knowing the sources of hazards and the safety instructions for working with the system
<b>Target group</b>	All persons with direct contact with the FPT robot system.
<b>Requirements</b>	Basic understanding of the customer-specific process (palletizing, machine feeding, ...)
<b>Contents</b>	<ul style="list-style-type: none"><li>/ Structure of the robot system</li><li>/ Function of the customer-specific process</li><li>/ Safety instructions for working with the robot system</li><li>/ Demonstrating the hazard areas on the robot and the modules</li><li>/ Test operation with safety doors open (setup mode), function of the confirmation button</li><li>/ Existing safety elements (emergency stop button, light guard, muting function, roller switch, door switch)</li><li>/ Function of the modules</li><li>/ Particular aspects in handling the modules used</li><li>/ Structure and contents of the documentation</li></ul>

### 2.2 T12/P12: Anlagenbedienung Teil 1 – duration: 4-6 h

<b>Objectives</b>	Acquiring all the necessary skills to be able to operate the FPT robot cell.
<b>Target group</b>	Operators
<b>Requirements</b>	<ul style="list-style-type: none"><li>/ Training module T1</li><li>/ Basic understanding of the customer-specific process (palletizing, machine feeding, ...)</li></ul>
<b>Contents</b>	<ul style="list-style-type: none"><li>/ Overview of the controls and indicators of a typical FPT robot cell</li><li>/ Introduction into the FPT user interface</li><li>/ Typical operator actions: Starting up/ shutting down the robot cell, Preparing (setting up)/ starting/ stopping/ resuming/ aborting a production job (system reset)</li><li>/ Eliminating process-related malfunctions (minor problems that may occur during normal production operations)</li><li>/ Recognizing and diagnosing alarms on the control panel and technically correct action</li><li>/ Changing the operating mode (manual/automatic mode)</li><li>/ Using the manual functions of the modules in manual mode:</li><li>/ Actuator control, home position travels, maintenance positions</li></ul>

## 2.3 T13: Advanced system operation – duration: 3-5 h

<b>Objectives</b>	Deepening of knowledge in handling the robot system. Learning advanced operating functions for maintenance and error diagnosis (manual movement for teaching-in of positions, axis calibration, ...).
<b>Target group</b>	Advanced operators, programmers
<b>Requirements</b>	<ul style="list-style-type: none"><li>/ Sound school education (basic mathematical-geometrical understanding)</li><li>/ Training module "Basic system operation"</li><li>/ Own axis calibration set available</li></ul>
<b>Contents</b>	<ul style="list-style-type: none"><li>/ Introduction to the control elements of the KRC user interface:<ul style="list-style-type: none"><li>- Changing between KUKA UI and Selogica</li><li>- Structure of the user interface</li><li>- Handling the KRC messages</li><li>- KRC operating modes (key switch &amp; operating mode table, function of the SoftPLC)</li><li>- Function of the confirmation buttons</li></ul></li><li>/ Manual traversing of the robot axes in the KUKA UI, retract axes:<ul style="list-style-type: none"><li>- Learning the basic elements about different coordinate systems and their use in the control</li><li>- Retraction from violation of workspace monitoring</li></ul></li><li>/ Manual traversing of the robot axes in Selogica:<ul style="list-style-type: none"><li>- Learning the basic elements about different coordinate systems and their use in Selogica</li><li>- Retraction from violation of workspace monitoring</li></ul></li><li>/ Simple commissioning tasks:<ul style="list-style-type: none"><li>- Clock alignment and alignment with the EMT</li><li>- Tool- &amp; base measurements</li></ul></li><li>/ Checking and correction of target positions through the teaching function of Selogica</li></ul>

## 2.4 T14/P14: System programming (without previous knowledge of Selogica)

duration: ca. 2 Tage

<b>Objectives</b>	Deepening of knowledge in handling the robot system Learning of all the necessary skills to program own functional sequences
<b>Target group</b>	Advanced operators, programmers
<b>Requirements</b>	<ul style="list-style-type: none"><li>/ Sound school education (basic mathematical-geometrical understanding)</li><li>/ Training module "System overview and safety instructions"</li><li>/ Training module "Advanced system operation"</li></ul>

- Contents**
- / Introduction to the creation of productive programs with Selogica directly:
    - System configuration (traversing ranges, axis limit switch, I/O configuration)
    - Overview of the existing function modules
    - Parameterization of function modules
    - Integration of teaching points
    - To home position
    - Control of the peripherals and use of I/O signals
    - Creation of subprograms and branched processes
    - Parts and pattern placements
    - Asynchronous operations
  - / Creation of a simplified production process

## 2.5 T15/P15: System programming (with previous knowledge of Selogica)

duration approx. 2 days

- Objectives**      Deepening of knowledge in handling the robot system
- Learning of all the necessary skills to program own functional sequences
- Target group**      Advanced operators, programmers
- Requirements**
- / Sound school education (basic mathematical-geometrical understanding)
  - / Training module "System overview and safety instructions"
  - / Training module "Advanced system operation"
  - / Experience in programming the Arburg Multilift product series with Selogica control
- Contents**            The training contents are similar to those of the system programming part 1 (without Selogica knowledge), but here the differences between the systems, as well as the advanced functionalities of the robot compared to an Arburg Multilift system are explained in more depth