

Module number: M1

Name of the module: HMI/SCADA Systems

Responsible: P8-BUU (P11-KMUTNB, P9-RMUTTO)

ID	Didactic modules (Teaching materials)	Comments	THEO (D3.4)	PRAC (D3.5)	THEO hours	PRAC hours	Total of Hours	LEADER	Contributor	Interested
M1	HMI/SCADA systems	Includes OPC, OPC UA, MES	12	9				P8-BUU	P11-KMUTNB	P9-RMUTTO

Total number of hours: 21h (Theory: 12h, Practice: 9h)

Aims:

The goal of the module is to learn the principles for data communication between PLCnext controller and computer display device (HMI) including to design and create screens for display and control instead of input and output devices. The students will learn how to construct and connect a SCADA system through OPC server (via OPC UA) for displaying useful information such as alarm notifications, trend graphs, etc.

Programme:

Lecture:

- (1h) Principles of computer display device (HMI)
- (1h) Design principles and programming for HMI
- (2h) Controller and HMI Connection: PLCnext
- (2h) Principles of SCADA systems
- (1h) SCADA system programming
- (1h) Introduction to OPC UA
- (1) SCADA system and OPC server communication
- (2h) Connection between SCADA system and PLCnext
- (1h) Introduction to MES

Practice:

- (30min) Computer display device configuration
- (2h) PLCnext configuration
- (30min) Design and Programming of digital and analog signals to HMI
- (30min) Design and Programming of alarm screen
- (30min) Design and Programming of graph display screen
- (2h) Run and Test

- (3h) Exercises

Assessment method: Writing exam and Results of the practice work

Prerequisites:

- Logical Thinking
- Basic knowledge of PLCnext
- PLC programming
- Basic knowledge of network communication

Expected Learning Outcomes (ELOs):

- Designing and programming of HMI
- Building a SCADA system based on PLCnext and OPC UA
- Acquiring and Visualizing Data from a SCADA system

Datum:

26.09.21

Absender:

ETAT team

Empfänger:

ETAT project partners

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