Design and commissioning of KNX/EIB systems
**Learning Objectives:**

- Design of KNX/EIB systems
- Commissioning and error detection
- Documentation and maintenance

**41 200 KNX/EIB Professional Programming Board**

**Hardware**

**KNX/EIB Professional Programming Board**

KNX/EIB Board in DIN-A4 size with the following components:

- 1 KNX/EIB power supply
- 1 USB programming interface
- 1 binary input, 6-way, with 6 hand/automatic simulation switches
- 1 10-way binary output with optional hand/automatic blind function
- 1 1-way hand/automatic dimming actuator
- 1 4-way KNX/EIB multifunctional pushbutton sensor
- 1 2-way KNX/EIB pushbutton sensor
- 1 2-way pushbutton with 2-way KNX/EIB pushbutton interface
- 11 signal lamps
- Sockets for connection with other systems
- Industrial blind socket

**Applications:**

- **Switching:** logical, preference, time, staircase, status, blind
- **Binary input:** switching, edge, cyclical, dimming, blind
- **Pushbutton sensor:** dimming, switching, edge, blind
- **Multifunction:** lighting scene, dimming, switching, blind
KNX/EIB Applications

Residential building

- approach area
- living room
- sleeping room
- kitchen / dining room
- office
- hallway

Office building with outdoor area

- outdoor lighting
- staircase
- 1 open-plan office
- 2 single offices with blind

Recreation centre

- approach area
- toilet facilities
- service centre
- billiard room

Administrative building

- outdoor area
- approach area
- reception
- 2 offices
- common rooms
Hardware

- Power supply with choke 230 V / 30 V, 320 mA
- USB interface
- 6-way binary input, multifunction, for hand/automatic operation
- Bus coupler with free access to programming key and LED
- Additional operating panel (e.g. central OFF)
- 4-way pushbutton sensor
- 2-way pushbutton sensor
- Flush-mounted pushbutton interface
- Standard 2-way pushbutton
10-way binary output, multi-function, for hand/automatic operation, with blind function

1-way dimmer output, multifunction, for hand/automatic operation

Industrial blind socket, 230 V

Industrial KNX/EIB interface, 3-way

2mm safety sockets for connecting external systems

6 simulation pushbuttons for binary outputs

LEDs and bulbs for simulating the outputs
**Software**

**KNX/EIB programming environment**

- Projecting and commissioning of intelligent building automation solutions for homes and other building objects
- Undo and reset functions
- Full drag-and-drop functionality
- Direct editing in open window
- Clear presentation of parameters
- Connection to the bus via USB, LAN or internet
- Reports for project documentation
- Administration of different project databases

**System requirements**
- IBM-compatible PC with Windows 2000 or Windows XP
- min. 1.0 GHz and 256 MB RAM
- 3 GB hard disk (without projects)
- USB-, RS232 or IP interface, depending on hardware

**Learning Objectives:**

- Design and configuration of installations (off-line)
- Programming and commissioning of installation devices (on-line)
- Documenting of projects
- Getting acquainted with diagnosis and solution of problems
ETS Trainee and ETS Professional

The KNX/EIB programming environment is the tool to design and configure intelligent KNX/EIB home and building control installations. It supports the following phases and tasks in the realization of home and building automation projects:

1. Design
2. Commissioning
3. Project documentation
4. Diagnostics and troubleshooting

90 151 KNX/EIB programming environment ETS Trainee
Allows execution of individual projects up to max. 20 products with bus access without time limit (no export function). Requires one licence per PC!

90 149 KNX/EIB programming environment ETS Professional
Requires one licence per PC!

Technomodel Blind

Tabletop model of a blind in transportable frame. It is connected to a standard blind or shutter actuator. The technomodel Blind provides the following functions:

- Blind up and down movement
- Change of flat inclination
- Positioning
- Safety functions

Technical data

- Operating voltage: 230 V AC
- Connection to blind socket STAKEI3N
- Connecting cable approx. 1m
- Dimensions: 800 x 640 x 120 mm (w x h x d)
Learning Objectives:

✓ How to clearly present the operational conditions of the consumers of a building on a Windows PC
✓ Central monitoring and controlling of components
✓ Design of work sheets
✓ Getting acquainted with the appearance of the displays and operating elements

The Visualization Software offers the following features:

- Alarm handling
- E-mail notification
- Surveillance (e. g. by webcam)
- Logical, time, counting, mathematical and scene functions
- Watchdog
- Data export to Excel possible
- Data archives
- Calendar programs
- Use of animated images
- Full touch-screen utilization
- 4 ready-to-use applications

System requirements

- IBM-compatible PC with Windows 98SE, ME, XP or Windows 2000
- min. 1.2 GHz and 256 MB RAM
- free serial RS232 or USB interface
Visualization

Visualization of the ready-to-use applications on PC

Plot Control with time axis (x) and value axis (y)

displays
operator elements

heating control
room temperature

lighting control
dim lamp E1

controller output
cooling

hall light

T1

T2

outdoor light

Visualization of the ready-to-use applications on PC
Projects

Project 1: Line/Area Coupling

Learning Objectives:
- Application of a line/area coupler
- Parameterizing of line/area couplers
- Use of filter tables
- Evaluation of routing counter output
- Commissioning and trouble shooting

Set of components for circuit construction, mounted on a grid board, consisting of:
- Subdistributor
- Power supply 640 mA
- Line/area coupler
- Set of KNX/EIB system cables with branch and connecting cable
- Set of wiring and distribution accessories

Experiment setup: Coupling of two lines
Project 2: Dimming

Learning Objectives:

✓ Switching ON/OFF
✓ Dimming (relative and absolute) of 0 - 100% of the adjustable dimming range
✓ Gradual/direct setting of the dim value
✓ Integration into a scene control
✓ Check-back of the initial state and value by the bus in case of modifications
✓ Commissioning and trouble shooting

Set of components for circuit construction, mounted on a grid board, consisting of:
- Subdistributor
- RCD switch 40/0.03 A, 4-pole
- Circuit breaker type B, 10 A, 1-pole
- Universal dimmer 300 W
- Switchable dimmer 0-10 V
- 4-way pushbutton sensor with bus coupler and mounting box
- Halogen lamp 100 W, incl. illuminant
- Electronic ballast for halogen lamps with 0-10 V interface and housed lamp 50 W
- Set of KNX/EIB system cables with branch and connecting cable
- Set of wiring and distribution accessories
Projects

Project 3: Heating Control

Learning Objectives:

✓ Moving to controller output value, position and forced position and finding out the maximum position
✓ Testing of the heating and cooling function as well as of the two-step heating with basic and additional phase
✓ Use of comfort and night reduction mode
✓ Testing frost and heat protection as well as stand-by mode
✓ Commissioning and trouble shooting

41 011 Project Heating Control KNX/EIB

Set of components for circuit construction, mounted on a grid board, consisting of:

- Electromotoric actuator with 2 binary inputs and 5 LEDs for position indication, mounted on heating valve
- Electrothermal actuator for 2-point or PWM control
- Window contact for connection to a heating actuator
- Presence detector, 2-channel KNX/EIB with mounting box
- Room temperature controller with bus coupler
- Room temperature controller with 4-way pushbutton sensor, LCD, bus coupler and mounting box
- 4-way switching actuator with lighting and heating application
- Set of KNX/EIB system cables with branch and connecting cable
- Set of wiring accessories
TRAINING PACKAGE TP 22.23

PROJECT HEATING CONTROL
Projects

Project 4: Alarm Function

Learning Objectives:

- Design of KNX/EIB alarm devices
- Integrating the sensors of alarm technology
- Commissioning of the telephone gateway
- Evaluating and supervising of alarm signals
- Parameterizing of an LCD
- Commissioning and trouble shooting

Set of components for circuit construction, mounted on a grid board, consisting of:

**Distribution section:**
- Subdistributor
- 2 control pushbuttons
- 8-way binary input

**Alarms and transmitters:**
- Reed contacts for door and window monitoring
- Infrared motion detector
- Telephone gateway (analogue) with
  - 2 bus inputs
  - 6 bus outputs
  - 4 relay outputs
- Glass breakage alarm
- Alarm distributor with sabotage control

- 5 control relays 12 V DC
- Control transformer 12 V DC
- Alarm group terminal KNX/EIB 12 V DC with 2 alarm group inputs for several passive alarms
- KNX/EIB LCD for display of alarm states and value parameterization
- Set of KNX/EIB system cables with branch and connecting cable
- Set of wiring accessories
**Learning Objectives:**

- Parameterization of logic modules
- Getting acquainted with the fundamentals of digital technology
- Programming with the operating elements
- Programming with the PC

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**LOGO! 24RC:**

- Integrated backlit display field and operator control panel
- Integrated EEPROM memory for control program and setpoint values
- 8 inputs (2 of which apt for analogue use): 0 ... 10 V
- 4 relay outputs 10 A max.
  - 10 A with resistive load
  - 3 A with inductive load
- Short circuit protection by external fusing
- 8 integrated time switches with automatic summer/winter time adjustment
- Power reserve approx. 80 hs
- Expandable by further modules
- Mounted on PLC Board 40 014
For further information please see Trainer Package TP 40.8 LOGO! in our catalogue „Control Technology“.

- **40 014** PLC Board 24V
- **40 026** KNX/EIB Expansion Module
- **63 524** 24VDC Power Supply Board 2.5 A
- **E40 804** Industrial user manual LOGO!
- **40 806** LOGO! interface cable
- **40 808** Software LOGO!Soft Comfort
  - Training and programming software
  - School licence
Courseware

Project-oriented training

On paper and on CD!

Contents of manual:

Introduction
- Fundamentals
- KNX/EIB tool software ETS

Experiments
- Experiment 1: Switch-off line
- Experiment 2: Switch-off line with central OFF
- Experiment 3: Switch-off line and staircase light control
- Experiment 4: Switch-off line and staircase light control, expanded by an authorization for central OFF
- Experiment 5: Pushbutton switch line with logical function
- Experiment 6: Time function
- Experiment 7: Dimming
- Experiment 8: Lighting scene

Trainer Section

KNX / EIB European Installation Bus System

Trainer Section

Version 4.1 - Order No. E41 207

KNX / EIB European Installation Bus System

E41 207CD Manual Trainer Section KNX/EIB
Practical Experiments

The Practical Experiments contents are identical to those in the trainer’s manual, however without solutions. Photocopy rights for personal use only.

Applications

- Fundamentals
- Applications
- KNX/EIB tool software
- Solution examples
- Components
Information and Consultation

Consultation

► Selection of products complying with syllabuses
► Comprehensive system determination
► Service-Center – we will call you back and support you in planning and project development
► Classroom layout concepts
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► Joint compilation of offers
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We will help you ...

► in all questions concerning the equipment for vocational technical education
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Subject to technical modifications and further developments.

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