

model: **PLC-GTBD1400**

PLC Trainer

Features

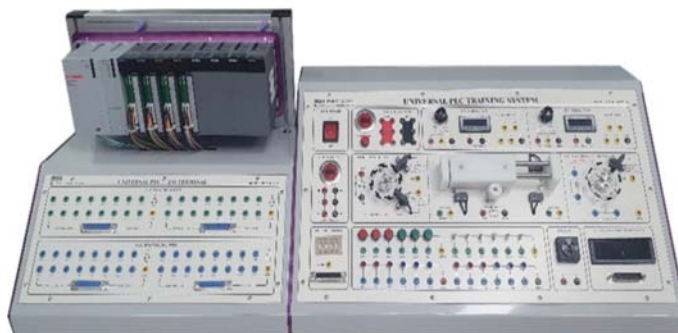
1) PLC Trainer

- (1) This equipment is designed and manufactured efficiently to learn PLC-based control technology and apply it to field work (electrical and electronic field, large-scale plant, automobile, semiconductor production line).
- (2) A single component software environment creates an environment where all components and tasks are integrated into the system.
- (3) It is designed to cope with learning without limiting various PLC models.
- (4) The equipment is configured not to check cable connections during operation and does not affect system operation.

2) Sensor trainer

- (1) The sensor trainer must give a hands-on experience for different object detection with sensors; covering the fundamentals of proximity sensors.
- (2) It must have the topics of configuration, function, areas of application and the selection of sensors based on the requirements of an application.
- (3) The equipment set must contain sensors with analogue and binary output signals, although the focus is on binary output signals.

System configuration



Spec

1. PLC unit

1.1) PLC unit

(1) CPU module : 4 EA

Memory

- Integrated work memory (for program) : 250kB
- Integrated work memory (for data) : 1000kB
- Load memory : 32 Gbyte
- Total retentive data area, max : 128 kByte

CPU processing time

- bit operations, type: 48 ns
- word operations, type : 58 ns
- fixed-point arithmetic, type : 77 ns
- floating-point arithmetic, type : 307 ns

Inputs/Outputs

- 16 Digital inputs (24 V DC)
 - Integrated channels (Digital inputs) : 32
 - Digital inputs, parameterizable : Yes
 - Source/sink input : P-reading
 - Rated (input voltage) value (DC) : 24 V
 - for signal "0" (input voltage) : -3 to +5V
 - for signal "1" (input voltage) : +11 to +30V
 - for signal "1" (input current) : 2.5 Ma
- 16 Digital outputs (24 V DC/0.5A)
 - Digital outputs type : Transistor
 - Integrated channels (Digital Outputs) : 32
 - Current -sourcing : Yes; push-pull output
 - LED diagnostics display on the device
 - Potential separation between the channels to 8
 - Switching capacity of the outputs
 - Resistive load (max) : 0.5A; 0.1A with high-speed output
 - Lamp load (max) : 5W; 1W with high-speed output
 - Output voltage
 - * For signal "0" : 1V
 - * For signal "1" : 23.2V
 - Output current
 - * For Signal "0" residual current : 0.5 Ma
 - * For signal "1" rated value : 0.5A
 - Total current of the outputs
 - * per channel : 0.5A
 - * per group : 8A
- 4 Analog inputs
 - Number of analog inputs : 5
 - * For current/voltage measurement : 4
 - * For resistance/resistance thermometer measurement : 1
 - Permissible input voltage : 28.8V
 - Permissible input current : 40mA
 - Cycle time : 1ms
 - Input measuring / value ranges ;
 - * Current ; 4 to 20mA, 0 to 20mA, \pm 20mA
 - * Voltages ; 0 to 10V, 1 to 5V, \pm 5V, \pm 10V
 - * Resistance ; 150 Ohm, 300 Ohm, 600 Ohm
 - * Resistance thermometer ; Pt100, Ni100 standard/climate
 - Resolution : 16 bits
- 2 Analog outputs
 - Number of analog outputs : 2
 - Cycle time : 1 ms
 - Value range ;
 - * Output ranges for current output ; \pm 20mA, 0 to 20mA, 4 to 20mA
 - * Output ranges for voltage output ; \pm 10V, 0 to 10V, 1 to 5V
 - Resolution : 16 bits

Communication / interfaces
 - PROFINET IRT with 2 port switch

Supply voltage : 24V DC

Display

- Screen diagonal : Min. 3.45 cm
- Resolution : 128 * 160

Programming languages

- Ladder Logic (LAD)
- Sequential Function Charts (SFC)
- Structured Text (ST)
- Instruction Lists (IL)
- Graph

Memory card : included

Dimensions : Max. (W x H x D) 110mm x 150mm x 130mm

(2) CPU module (CJ2M-CPU35) : 3 EA

Program capacity : 80 K steps

Data memory capacity : 160 K words

Logic execution time : 0.04 μ s

Max. number of expansion units : 40

Max. number of local I/O points : 2560

Number of built-in digital I/Os 0

Communication port(s) : EtherNet/IP, Ethernet TCP/IP, USB

Accessories

- RS-485 adaptor, 2 or 4 wire, connects directly to RS-232C 9-pin port for serial PLC link, screw terminals on RS-485 side.
- Power supply unit, 100-240 VAC, output capacity : 25W, with RUN output
- Power supply unit, 24 VDC, output capacity : 25W
- Pulse I/O Module for CJ2M, NPN with 10 inputs (four interrupt/quick response and two high-speed counter inputs) and 6 outputs (two pulse and two PWM outputs)
- Pulse I/O Module for CJ2M, PNP with 10 inputs (four interrupt/quick response and two high-speed counter inputs) and 6 outputs (two pulse and two PWM outputs)
- CP1 RS-232C (15 m max.) serial communication option board
- CP1 RS-422/485 (isolated 500 m max.) serial communication option board
- USB Programming cable
- Single-user education license for Cx-One Latest version, for Windows Latest (64 bit)
- Flash memory card, 512MB
- 5-port enhanced Ethernet switch
- Ethernet patch cable, F/UTP, Cat.6A, LSZH (Blue), 2m
- Ethernet patch cable, F/UTP, Cat.6A, LSZH (Blue), 3m
- DIN-rail mounting terminal block, MIL40 socket, push-in clamp, 40 points, general-purpose
- Cable, RS-232C, for programming PLC or HMI 9-pin port, 2 m
- Cable, RS-232C, for programming NT HMI 9-pin port, 2 m

(3) CPU module : 4 EA

CPU : FX3S-30MR-ES

Supply voltage : 100-240VAC

No. of inputs : 16

No. of Outputs : 14

Input Type : 24 VDC Sink/Source

Output Type : Relay

- Programming software (Educational and perpetual License)
- All required accessories, cables, memory card must be provided

(4) CPU module : 3 EA

CPU : 5069-L320ER (2 sets)

Communication Ports : 1 Type B 2.0 Full-speed USB and 2 Ethernet/IP Ports

Application Memory 2 Megabytes

Module type : CompactLogix Controller

Local I/O modules 16 I/O modules

Communication rate, Ethernet : 10 Mbps / 100 Mbps / 1 Gbps

No. of Ethernet nodes : 40

No. of supported sockets : 32

- Programming software (Educational and perpetual License)
- All required accessories, cables, memory card must be provided

(5) CPU module : 3 EA

CPU : DVP-ES2

Supply / input / output : AC/DC/Realy

MPU points : 16

Program capacity : 16 k steps

Built-in with 3 COM ports : 1 RS-232 port and 2 RS-485 ports, all are able to operate independently

(Master/Slave)

Max. I/O points : 256 input points + 16 output points, or 256 output points + 16 input points

DVP-EX2 MPU is built in with 12-bit 4AD/2DA and offers analog/temperature modules of 14 bit resolution

Built-in with 8 high-speed input points (2 points for 100kHz, 6 points for 10kHz) and supports U/D,

U/D Dir A/B counting modes

- Programming software (Educational and perpetual License)
- All required accessories, cables, memory card must be provided

(6) CPU module : 3 EA

XGK-CPUS (standard)

- Program capacity : 32Kbytes
- I/O points : 3,072
- I/O device point : 32,768 (remote I/O)
- Processing speed : 84ns/step
- Programming software (Educational and perpetual License)
- All required accessories, cables, memory card must be provided

(7) Base module : 1 EA (Standard)

(8) HMI Module (HMI Module must be of same brand as PLC)

Display

- Display size : 7"
- Display resolution : 800 x 480
- Display type : Widescreen TFT
- Number of colors : 64,000 colors

Funcations

- Operator control elements : Touch screen
- Backlight : Dimmable LED
- Comes with a configurable software (perpetual license)

Interfaces

- 1 Ethernet interface
- 1 USB interface

Degree of proction

- Front : IP 65
- Rear : IP 20

1.2) PLC Trainer System with Simulation Modules : 8 STEPS

(1) Universal PLC trainer board

Mounting system

- Universal PLC trainer board size : Min. (W x H) 305 mm x 300mm
- Stable, power-coated, sheet-steel mounting system
- Must have integrated power supply unit, AC 110/230 V/DC 24 V, 4 A
- Simulation Modules ;
- Size : Max. 19" - 25"
- Should have 19"-25" module of 16 digital inputs on 4 mm safety sockets and 16 switches/pushbuttons for signal simulation
- Should have 19"-25" module of 16 digital outputs on 4 mm safety sockets
- Should have 19"-25" module of 4 analog inputs on 4 mm safety sockets can be switched to simulation via potentiometer and 2 analog outputs on 4 mm safety sockets
- Must have a 19"-25" module of 8 x 4 mm safety sockets, red for 24 V distribution and 8 x 4 mm safety sockets, blue for 0 V distribution
- Should have 19"-25" module of 4 relay output with 8 x 4 mm safety cable

PLC rack

- PLC carrier rack must be a desktop version, size min. 305 x 300 mm (W x H)
- The carrier sits securely on a desk and can be integrated into a frame or placed at an angle on the desk
- Stable, powder-coated, must made with sheet-steel mounting system
- Mounting rail for 19" module must be attached to the carrier system

- 16 Digital inputs module
 - Operating voltage : 24 V DC
 - Input voltage : 0 V to operating voltage
 - Current rating : Max. 4.0 A
 - Connection : 4 mm safety sockets
 - Front-plate width : Min. 12 HP
- 16 Digital output module
 - Operating voltage : 24 V DC
 - Output current : Max. 0.5 A per out
 - Connection : 4 mm safety sockets
 - Front-plate width : Min. 12 HP
- 4 Analog inputs/2 Analog Outputs
 - Operating voltage : 24 V DC \pm 3%
 - Input/output voltage : 0-10 V DC and \approx 10 V DC respectively
 - The voltage values must be shown on the integrated display
 - Output current : max. 0.5 A per output
 - Connection : 4 mm safety sockets
 - Front-plate width : Min. 12 HP
- 24 V/ 0 V module
 - Operating voltage : 24 V DC, 0 V DC
 - Connection : 4 mm safety sockets
 - Front-plate width : Min. 9 HP
- Relay output module
 - 4 relay outputs with 8 4 mm safety cable
 - Maximum load : 24 V, 4.5 A
 - Connection : 4 mm safety sockets
 - Front-plate width : Min. 6 HP

2. Sensor Trainer : 8 sets

2.1) Magneto-resistive proximity sensor module

- (1) Magneto-resistive proximity sensor on Quick-Fix safety and quick mounting system for profile plates
- (2) Operating voltage 10-30 V DC
- (3) Starting function N/O contact (PNP)
- (4) Output current 200mA
- (5) Protection against short-circuit, overload and reverse polarity
- (6) Vlock design
- (7) Connection via the 4 mm safety connectors integrated in the Quick-Fix quick mounting system

2.2) Inductive proximity sensor module, M12

- (1) Proximity sensor with protection against polarity reversal, overload and short circuit
- (2) M12 design
- (3) Connection via the 4 mm safety connectors integrated in the Quick-Fix quick connector system
- (4) Power supply 10-30 V DC
- (5) N/O contact (PNP) starting function
- (6) Quick-Fix quick connector system
- (7) Sensing distance of 0-4 mm

2.3) Inductive proximity sensor module, M18

- (1) Inductive proximity sensor on the Quick-Fix secure and quick action mounting system for profile plates and cable with safety plug
- (2) Size M18
- (3) Non-flush fitting
- (4) Operating voltage 15-34 V DC
- (5) Sensing distance 8 mm
- (6) Connection via the 4 mm safety connectors integrated in the Quick-Fix quick connector system
- (7) Starting function N/O (PNP)

2.4) Inductive analog sensor module, M12

- (1) Inductive proximity sensor on the Quick-Fix secure and quick action mounting system for profile plates and cable with safety plug
- (2) Size M12
- (3) flush fitting
- (4) Operating voltage 15-30 V DC

- (5) measuring range 0-6 mm
- (6) Connection via the 4 mm safety connectors integrated in the Quick-Fix quick mounting system
- (7) Analog output, 0-10 V DC or 0-20 mA

2.5) One-way light barrier, receiver

- (1) One-way light barrier receiver (optical proximity sensor) on the Quick-Fix secure and quick action mounting system for profile plates and cable with safety plug
- (2) size Q30
- (3) Operating voltage 10-30 V DC
- (4) Light method : infrared
- (5) adjustable by potentiometer
- (6) connection via 4 mm safety connectors integrated in the Quick-Fix quick mounting system
- (7) starting function N/O (PNP)

2.6) One-way light barrier, transmitter

- (1) One-way light barrier transmitter (optical proximity switch) on the Quick-Fix safety and quick mounting system for profile plates and cables with safety plug
- (2) Operating voltage 10-30 V DC
- (3) Type of Light : infrared
- (4) Range up to 6000 mm
- (5) adjustable by potentiometer
- (6) connection via 4 mm safety connectors integrated in the Quick-Fix quick mounting system
- (7) Test input

2.7) Fibre-optic unit

- (1) Fibre-optic unit (optical proximity switch) on Quick-Fix safety and quick mounting system for profile and cables with safety plug
- (2) size Q30
- (3) Operating voltage 10-30 V DC
- (3) Type of Light : red
- (4) Range up to 400 mm
- (5) adjustable by potentiometer
- (6) connection via 4 mm safety connectors integrated in the Quick-Fix quick mounting system
- (7) starting function N/O and N/C contact (PNP)

2.8) Fibre-optic cable

- (1) Fibre optic cable (through-beam sensor with polymer fibre-optic cable) on Quick-Fix safety and quick mounting system for profile plates and cables with safety plug
- (2) Maximum range 400 mm
- (3) Minimum bending radius 25 mm
- (4) Fibre-optic length 2000 mm

2.9) Retro-reflective sensor module

- (1) Retro-reflective sensor (optical proximity switch) on Quick-Fix safety and quick mounting system for profile plates and cables with safety plug
- (2) size Q30
- (3) Operating voltage 10-30 V DC
- (4) Type of Light : red
- (5) Polarised
- (6) Range up to 2000 mm
- (7) adjustable by potentiometer
- (8) connection via 4 mm safety connectors integrated in the Quick-Fix quick mounting system
- (9) starting function N/O contact (PNP)

2.10) Reflector

- (1) Reflector on the Quick-Fix secure and quick action mounting system for profile plates
- (2) principle : triple mirror
- (3) diameter 20 mm

2.11) Diffuse sensor module with background suppression

- (1) Diffuse sensor with background suppression (optical proximity switch) on Quick-Fix safety and quick mounting system for profile plates and cables with safety plug
- (2) Operating voltage 10-30 V DC
- (3) Type of Light : red
- (4) adjustable using teach-in
- (5) connection via 4 mm safety connectors integrated in the Quick-Fix quick mounting system
- (6) starting function N/O and N/C contact (PNP)

2.12) Capacitive proximity sensor module, M12

- (1) Proximity sensor with protection against polarity reversal, overload and short circuit
- (2) M12 design

- (3) connection via 4 mm safety connectors integrated in the Quick-Fix quick connector system
- (4) Power supply 10-36 V DC
- (5) N/O contact (PNP) starting function
- (6) Quick-Fix quick connector system
- (7) Sensing distance of 0-4 mm

2.13) Electrical indicator unit and distributor

- (1) The device contains an acoustic indicator and eight lamps with terminals and three buses for power supply. Through-contact socket pairs per lamp allow the element to also be used as a distributor
- (2) Power consumption acoustic indicator : 0.04 W
- (3) Power consumption indicator lamps : 1.2 W
- (4) Frequency acoustic indicator : 420Hz - 450Hz
- (5) Consisting of Bus bar, mass flow rail, contact for 4 mm security plugs, mounting with protection against accidental contact with a built-in lock grid ledge in the fixture for electrical port and control unit or else with plug-in adaptors for the profile plate.

2.14) Slide unit

- (1) The slide unit contains a measurement gauges and a holder for test object, which allow measurements of distance. Between sensor and test object on Quick-Fix safety and quick mounting system for profile plates

2.15) Set of test objects materials

- (1) Set of test objects for determining the response characteristics of sensors consisting of sample materials in different design and material strength'
 - Magnets
 - Transparent and coloured plastics
 - Various metals
 - Magnets
 - Rubber
 - Cardboard
 - Kodak grey card
 - No. of supported sockets : 32
 - Wood
 - Size : Min. 50 x 50 mm

2.16) Aluminum profile plate : 5 SETS

- (1) All of the components fit securely and safely into the grooves of the profile plate
- (2) Anodized aluminum
- (3) Grid dimension : 50 mm
- (4) Dimensions : 700 x 550 mm or less

2.17) Workbook about sensors object detection : 1 campus license

- (1) Projects : 15 industrial projects
- (2) Sample solutions
- (3) Training notes
- (4) Multimedia CD-ROM with graphics, photos of industrial applications
- (5) Exercise sheets for trainees

2.18) 4 mm safety laboratory cables : 8 SETS

- (1) Plug with rigid protective sleeve and axial socket
- (2) Conductor cross section : 1 mm²
- (3) 1000 V CAT
- (4) Rated current 16 A
- (5) Complete cable set must consisting of min. 58 safety laboratory cables with 4 mm safety plugs in brown, black, gray, and blue
 - 6 x gray 50 mm
 - 5 x gray 300 mm, 5 x brown 300 mm, 5 x black 300 mm, 5 x blue 300 mm
 - 4 x gray 500 mm, 4 x brown 500 mm, 4 x black 500 mm, 4 x blue 500 mm
 - 2 x gray 1000 mm, 2 x brown 1000 mm, 2 x black 1000 mm, 2 x blue 1000 mm,
 - 2 x gray 1500 mm, 2 x brown 1500 mm