

PLC with Motor Control Training Panel

User Manual



Code number: AA044.001.04

1. Introduction

What is the PLC with Motor Control Training Panel?

The PLC with Motor Control Training Panel is a powerful didactic tool used both in academic and industrial courses. Through its enhanced performance and usability, the PLC with Motor Control Training Panel is one of the best examples of productivity and innovation for device configuration and programming via the Totally Integrated Automation Portal software.

What are the features of the PLC with Motor Control Training Panel?

PLC with Motor Control Training Panel offers outstanding system performance for short response times, the highest control quality and is also both technologically and security integrated. TIA Portal ensures maximum engineering efficiency and reduced projects costs.

2. Safety precautions



Use only 230VAC voltage at the power supply terminals and 24VDC low voltage for the inputs and outputs. Use only recommended connecting cables for electrical connections between the sockets of the process. Also observe specifications included in the data sheets for the connected devices and all safety instructions!

3. Functions and layout



Layout:

- 1x Mushroom pushbutton
- 1x Reset pushbutton
- 1x 24VDC fuse 2A
- 2x Red pushbutton with 1NC contact
- 2x Green pushbutton with 1NO contact
- 4x Switch with 2 positions and 1NO contact
- 2x Green LED lamp at 24VDC
- 2x Red LED lamp at 24VDC
- 2x Yellow LED lamp at 24VDC
- 2x White LED lamp at 230VAC
- 1x potentiometer
- 1x LCD digital screen
- 230VAC IN with 4mm safety sockets (L, N, PE)
- 230VAC OUT with 4mm safety sockets (L, N, PE)
- 1x safety relay 4mm sockets:
 - Y1-Y2: feedback for safety relay reset function
 - 41-42: NC non safety contact
 - 13-14, 23-24, 33-34: NO safety contacts
- 6x 4mm safety sockets for external DI
- 4x 4mm safety sockets for DO
- 2x Motor circuit-breaker with safety sockets:
 - 1, 3, 5 400VAC IN terminals
 - 2, 4, 6 400VAC OUT terminals
 - PE
 - 33-34, 43-44: NO contacts
- 2x Contactor 3kW with safety sockets:
 - 1, 3, 5 400VAC IN terminals
 - 2, 4, 6 400VAC OUT terminals
 - PE
 - 13-14: NO contact
 - 21-22: NC contact
 - A1-A2: 24VDC coil

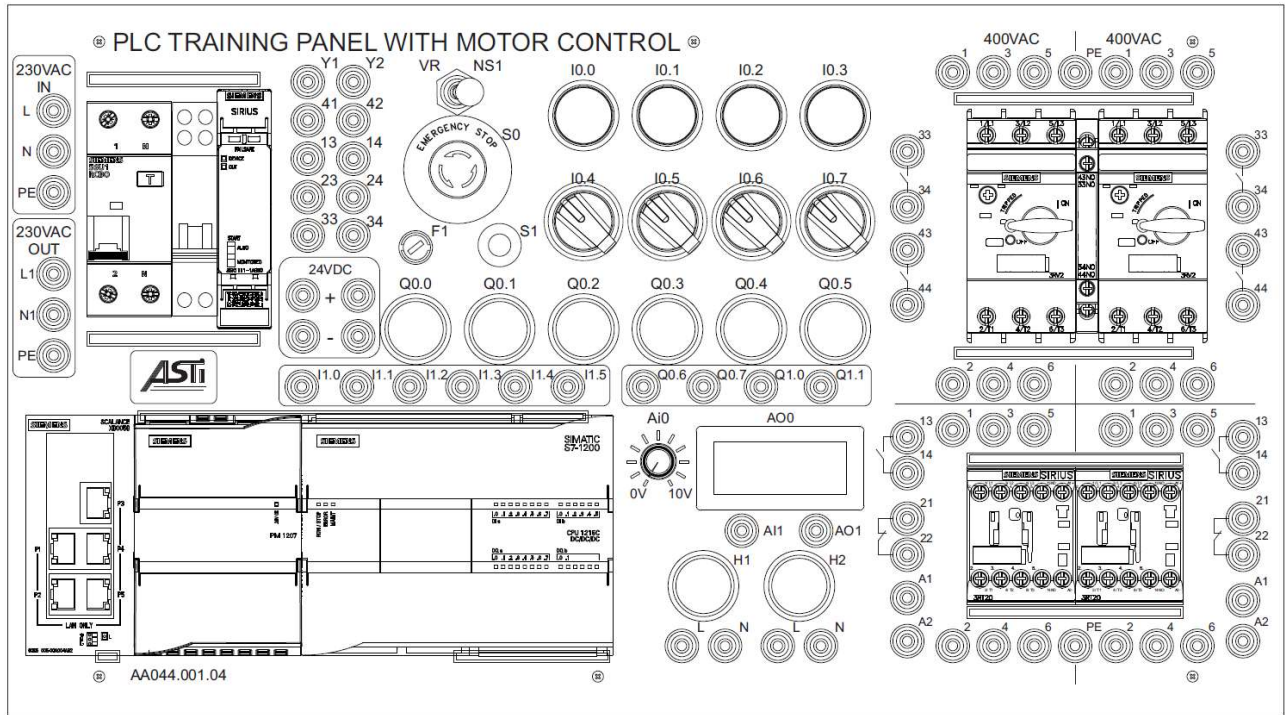
Modules:

- PLC SIEMENS SIMATIC S7-1215C DC/DC/RLY
- SWITCH SCALANCE XB005
- SIEMENS 24VDC power supply
- SIRIUS safety relay
- RCCB, P+N, C16, 30mA with Undervoltage release at 230VAC
- SIRIUS Motor circuit-breaker with auxiliary lateral contacts block
- SIRIUS tripolar contactor 3kW with auxiliary front contacts block

4. Technical data

Name	Description
Dimensions (W x H x D)	
Programmable Logic Controller	
CPU	SIEMENS SIMATIC S7-1200: <ul style="list-style-type: none"> • compact CPU, DC/DC/DC • 2 PROFINET ports • 14 DI 24 V DC • 10 DO 24 V DC ; 0.5A • 2 AI 0-10 V DC • 2 AO 0-20 mA DC • Power supply: DC 20.4-28.8V DC • Program/data memory 125 KB
Switch	SIEMENS SCALANCE XB005: <ul style="list-style-type: none"> • unmanaged Industrial Ethernet Switch for 10/100 Mbit/s • for setting up small star and line topologies • LED diagnostics • IP20 • 24 V AC/DC power supply • 5x 10/100 Mbit/s twisted pair ports with RJ45 sockets
Power Module	SIEMENS PM1207: <ul style="list-style-type: none"> • input: 120/230 V AC • output: DC 24 V/2,5 A
RCCB P+N, C16, 30mA	SIEMENS: <ul style="list-style-type: none"> • 6 kA • 1P+N • Type AC • 30 mA • C-Char • In: 16 A • Un AC: 230 V
Undervoltage release	SIEMENS: <ul style="list-style-type: none"> • 230 V AC • For mounting on the RCCB
Circuit Breaker	SIEMENS Circuit Breaker: <ul style="list-style-type: none"> • Circuit breaker size S00 for motor protection • CLASS 10 A-release 1.1...1.6 A, N-release 21 • Standard switching capacity
Contactor	SIEMENS Contactor: <ul style="list-style-type: none"> • AC-3 9 A • 4 kW / 400 V 1 NO • 24 V DC 3-pole

5. Diagrams and usage notes



Note!



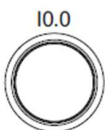
Emergency stop mushroom pushbutton



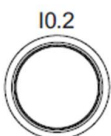
Reset pushbutton



24VDC fuse 2A



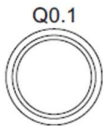
Red pushbutton with 1NC contact



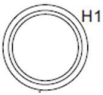
Green pushbutton with 1NO contact



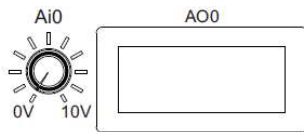
Switch with 2 positions and 1NO contact



Green, red and yellow LED lamps 24VDC



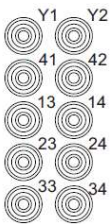
White LED lamp 230VAC



Potentiometer and LCD screen



230VAC IN/OUT 4mm safety sockets (L - phase, N - neutral, PE - earthing)



Safety relay 4mm sockets:

- Y1-Y2: feedback for safety relay reset function
- 41-42: NC non safety contact
- 13-14, 23-24, 33-34: NO safety contacts



4mm safety sockets for external DI



4mm safety sockets for DO



- Motor circuit-breaker safety sockets:
 - 1, 3, 5 400VAC IN terminals
 - 2, 4, 6 400VAC OUT terminals
 - PE
 - 33-34, 43-44: NO contacts



- Tripolar contactor 3kW safety sockets:
 - 1, 3, 5 400VAC IN terminals
 - 2, 4, 6 400VAC OUT terminals
 - PE
 - 13-14: NO contact
 - 21-22: NC contact
 - A1-A2: 24VDC contactor coil

6. Related equipment and software

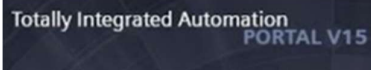


Safety Connection
Cables 4mm 1m
AA402.000.02

The PLC with Motor Control Training Panel is a highly flexible, modular and versatile didactic tool that offers compatibility with a wide range of related equipment. Thus, the user can order custom configurations of the panel in order to meet the optimal desired requirements for the application in use.

Related equipment:

- 4mm safety connection cables
- Power cables
- HMI Training Panels
- AC Motor



The new control generation of PLC with Motor Control Training Panels have an updated system architecture that offers new and efficient methods of programming and configuration via TIA Portal. TIA Portal is the intuitively operated engineering system for the SIEMENS PLC with Motor Control Training Panel. The advantages obtained through this configuration include:

- Clear program structures
- Intuitive and effective programming solutions
- Powerful user program
- Optimal program in terms of memory and runtime
- Easy to understand and maintain

7. Suggested applications

The PLC with Motor Control Training Panel has been designed for a wide variety of didactic applications both for the academic and industrial (post-academic) side. The main purpose of the training panel is to ensure a support for learning basic knowledge in the PLC programming field. It enables the trainee to acquire programming and configuration abilities in TIA Portal using specific programming languages, that can be used in developing projects with practical application.

The suggested applications include:

- Scenarios based on electrical motor drives
- Conveyors control

8. Useful references

Here is a list of a few useful sources of information where further documentation can be found:

- The Intelligent Choice for your automation tasks – SIMATIC Controllers
- SIEMENS SIMATIC S7-1215 – Getting Started
- SIMATIC S7-1215 plus TIA PORTAL - The ultimate plus in automation
- S7-1215 Technical Data
- TIA Portal Engineering Framework
- Profit from engineering efficiency - Totally Integrated Automation Portal in practice

9. Scope of delivery, transport and unpacking

Scope of delivery

The following components are included in the scope of delivery:

- PLC with Motor Control Training Panel
- Power cables
- User Manual

Transport

The PLC with Motor Control Training Panel package is shipped in a carton. The carton must be secured against drops and falling. Asti Automation must be notified immediately of any damage.

Unpacking

Inspect the PLC with Motor Control Training Panel package for possible damage after unpacking. Asti Automation must be notified immediately of any damage.



06-2020 Technical changes reserved © ASTI

ASTI AUTOMATION S.R.L
139 Calea Plevnei 060011
Bucharest Romania
Tel: +40213125907
www.astiautomation.com

