



EMP-4648

Ultra-compact SoftPLC-based Controller

Features

- Ultra-compact size, space-saving, and wiring reduction
- Modular design, supports expansion with slim EC4 series
- EtherCAT cycle time up to 500 μ s
- Supports up to 128 EtherCAT slaves, motion control up to 16 axes
- Supports all IEC-61131-3 SoftPLC languages (FBD, LD, IL, ST, SFC)
- EtherCAT, OPCUA, Modbus TCP
- User-friendly Web Management Interface
- RJ45 Screw-lockable Connectors



Introduction

The EMP-4648 is a high-performance, ultra-compact SoftPLC-based controller designed for spaceconstrained automation applications. Its ultra-compact size significantly saves installation space and wiring, making it ideal for space-limited environments and multi-axis motion control applications. The modular design allows expansion with the thin EC4 series EtherCAT I/O modules, providing greater flexibility and scalability.

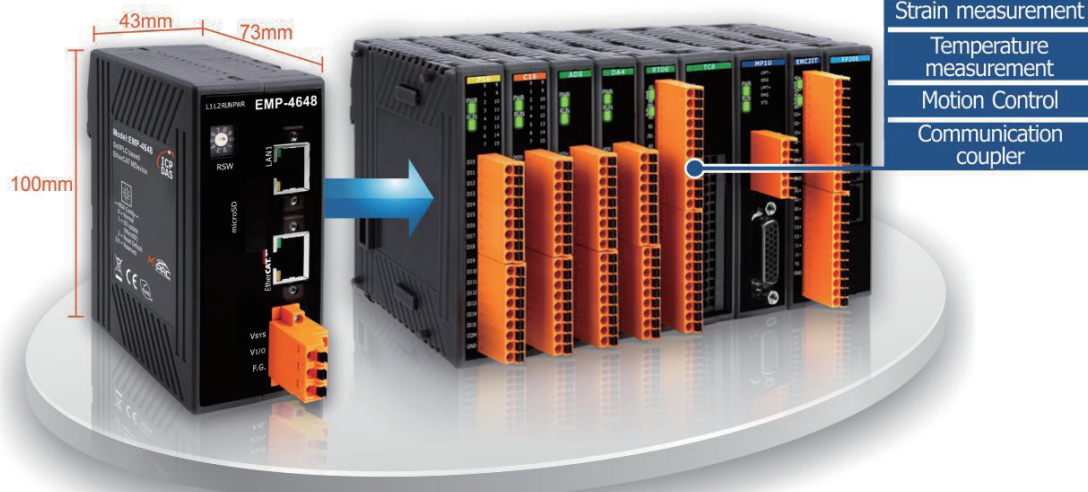
Features:

- **High-Performance Processor** : Equipped with a quad-core Cortex-A53 processor running a Real-Time operating system, delivering high efficiency and real-time control.
- **Standardized Development Environment** : Compliant with PLCopen standards and IEC-61131-3, supporting multiple programming languages, including SFC, ST, FBD, LD, and IL.
- **Comprehensive Communication Protocols** : Supports EtherCAT, OPC UA, Modbus TCP, and various industrial automation communication protocols, ensuring seamless integration with different devices.
- **Modular Expansion Capability** : Supports EC4 series EtherCAT module I/O, allowing flexible I/O configuration for diverse application needs.
- **User-friendly Web Management Interface** : Built-in web management interface eliminates the need for additional software tools, enabling users to configure, manage, and maintain the system easily through a web browser.

Applications

Ultra-compact size and modular design

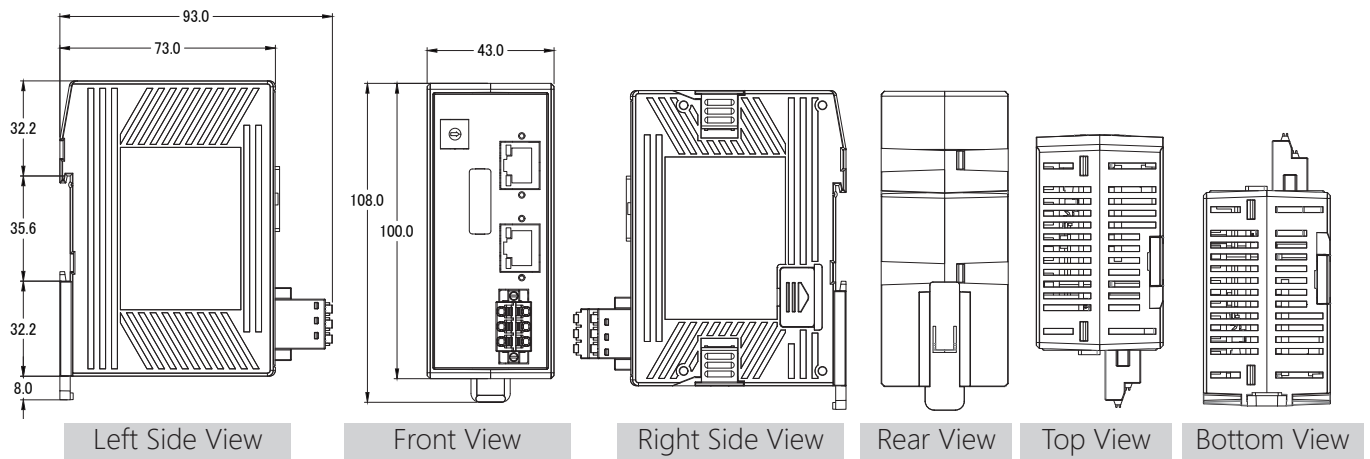
supports EC4 modules for flexible application expansion



Specifications

Model	EMP-4648
Software	
OS	Real-Time Linux (RT-Preempt, Kernel 6.1.83)
Programming languages per IEC 61131-3	Instruction List (IL)
	Ladder Diagram (LD)
	Function Block Diagram (FBD)
	Structured Text (ST)
	Sequential Function Chart (SFC)
Development Software	Win-GRAF
Protocols	Modbus TCP, Master/Slave
	OPCUA Server
	EtherCAT
Motion Control	PLCopen Function Blocks
Main Unit	
CPU	Cortex-A53, Quad-core, 1.4GHz
SDRAM	DDR4 - 2GB
Storage	eMMC Flash – 8GB
LED Indicators	1 x Run, 1 x Power, 2 x EtherCAT Runtime
Communication Ports	
Ethernet	1 x RJ-45, 10/100/1000 Base-TX
EtherCAT	1 x RJ-45
EtherCAT	
Cycle Time	500 µs (min.)
Number of Slaves	128
Number of Axes	16
Power	
Input Range	+24 VDC
Double power input	Yes
Bus maximum current (EBUS)	4A
Consumption	10 W
Mechanical	
Casing	Plastic
Dimensions (mm)	43 x 108 x 73 (W x L x D)
Installation	DIN-Rail or Wall Mounting
Environmental	
Operating Temperature	-25 ~ +70 °C
Storage Temperature	-30 ~ +80 °C
Humidity	10 ~ 90% RH, Non-condensing

■ Dimensions (Units: mm)



■ Ordering Information

EMP-4648 CR	Ultra-compact SoftPLC-based Controller (RoHS)
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