



EMP-9051-16/EMP-9051-32/EMP-9091-16/EMP-9091-32/EMP-9251-16/EMP-9251-32

EtherCAT Master based 9000 series PAC

Features

- Windows 10 IoT Enterprise (64-bit)
- VGA and HDMI Port Output
- 2 10/100/1000M Ethernet Ports
- Redundant Power Input
- Synchronized motion (E-GEAR, E-CAM)
- Virtual axes
- Multi-axis linear interpolation



Introduction

EtherCAT (Ethernet for Control Automation Technology) is an open, high-performance fieldbus system that makes Ethernet technologies available at the I/O level. EtherCAT provides flexible wiring, fast communication and many other nice features. It needs a master to control many slaves. ICP DAS provides EtherCAT Master based PAC for users to build their motion related applications.

EtherCAT Master can offer multi-axis motion and I/O control functions by its own built-in CPU. In this way, the CPU loading of PAC can be reduced dramatically. In the mean while, ICP DAS also provides many I/O slave modules for users to choose from. Since EtherCAT technology is an industrial standard, those modules can work together in a system with 3rd-party EtherCAT slaves as well.

What is Windows 10 IoT ?



Windows 10 IoT is a member of the Windows 10 family that brings enterprise-class power, security, and manageability to the Internet of Things. It leverages Windows' embedded experience, ecosystem, and cloud connectivity, allowing organizations to create their Internet of Things with secure devices that can be quickly provisioned, easily managed, and seamlessly connected to an overall cloud strategy.

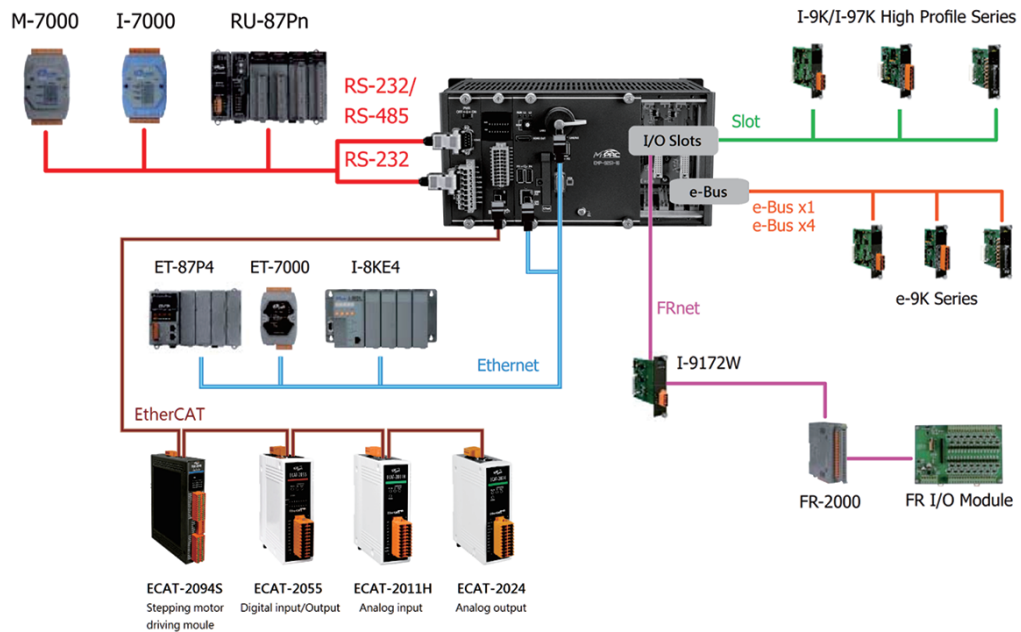
- Traditional Windows Shell with Advanced Lockdown Features
- Full Windows UI support (e.g. UWP, WinForms, etc)

Specifications

Model	EMP-9091-32	EMP-9091-16	EMP-9051-32	EMP-9051-16	EMP-9251-32	EMP-9251-16
Software						
OS	Windows 10 IoT Enterprise (64-bit)					
Framework Support	.Net Framework 3.5 ~ 4.8					
Service	IE11, FTP Server, IIS 7.0, ASP (Java Script, VB Script)					
SDK	DII for VC, DII for Visual Studio.Net					
Multilanguage Support	English, German, French, Spanish, Portuguese, Russian, Italian, Korean, Japanese, Simplified Chinese, Traditional Chinese					
Main Unit						
CPU	Intel Atom E3950 (1.6 ~ 2.0 GHz, 4C4T)		Intel® Core™ i5-8365UE Processor (1.6 ~ 4.1 GHz, 4C8T)			
64-bit Hardware Serial Number	Yes					
System Memory	8 GB DDR4 SDRAM		16 GB DDR4 SDRAM			
Non-Volatile Memory	128 KB MRAM, 16 KB EEPROM					
Storage	64 GB SSD, 32 GB CF card					
Real Time Clock	Provide seconds, minutes, hours, dates, day of week, month, year					
Watchdog Timer	Dual Watchdog Timer					

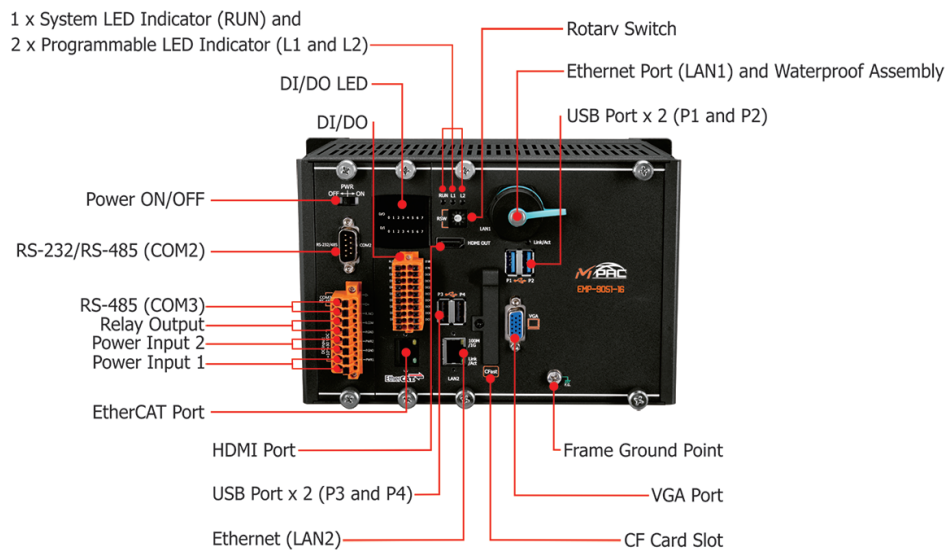
Display						
Signal	VGA, HDMI					
Resolution	VGA 1280 x 1024 ~ 1920 x 1080 (16 : 9), 640 x 480 ~ 1024 x 768 (4 : 3) HDMI 2560 x 1600 @ 24bpp					
LED Indicators						
Status	1 x System, 2 x Programmable					
COM Ports						
Ports	1 x RS-485 (3000 VDC Isolated), 1x RS-232/RS-485 (3000 VDC Isolated)					
HMI						
Buzzer	Yes					
Rotary Switch	1 x 10 Position (0 ~ 9)					
Ethernet						
Ports	2 x RJ-45 10/100/1000 Base-TX					
USB						
Ports	4 x USB 2.0					
Power						
Input Range	+10 ~ 30 VDC (1 kV Isolated)					
Redundant Power Inputs	Yes					
Consumption	18.5W					
I/O Expansion						
I/O Type	e9K, I-9K, I-97K series					
Slots	-	-	-	-	2	
Digital Input						
Channels	8					
Type	Sink/Source					
ON Voltage Level	+19V~+24V					
OFF Voltage Level	+11V Max.					
Isolation	3000VDC					
Digital Output						
Channels	8					
Type	Sink(open collector)					
Load Voltage	+24V					
Max. Load Current	1000 mA/ch					
Isolation	3000Vrms					
EtherCAT						
Ports	1 x RJ-45					
No. of Axes	Max. 32	Max. 16	Max. 32	Max. 16	Max. 32	Max. 16
No. of Nodes	Max. 512					
Data Transfer Medium	Ethernet Cable (Min. CAT 5e), Shielded					
Interpolation						
Cicular	Any 2- or 3-axis					
Helical	Any 3-axis					
Linear	Any 2- or 32-axis					
Mechanical						
Dimensions (mm)	239 x 164 x 133(W x L x H)				300 x 164 x 133(W x L x H)	
Installation	DIN-Rail, Wall mounting					
Environmental						
Humidity	10 ~ 90 % RH, Non-condensing					
Operating Temperature	-25 ~ +60 °C					
Storage Temperature	-30 ~ +80 °C					

Applications

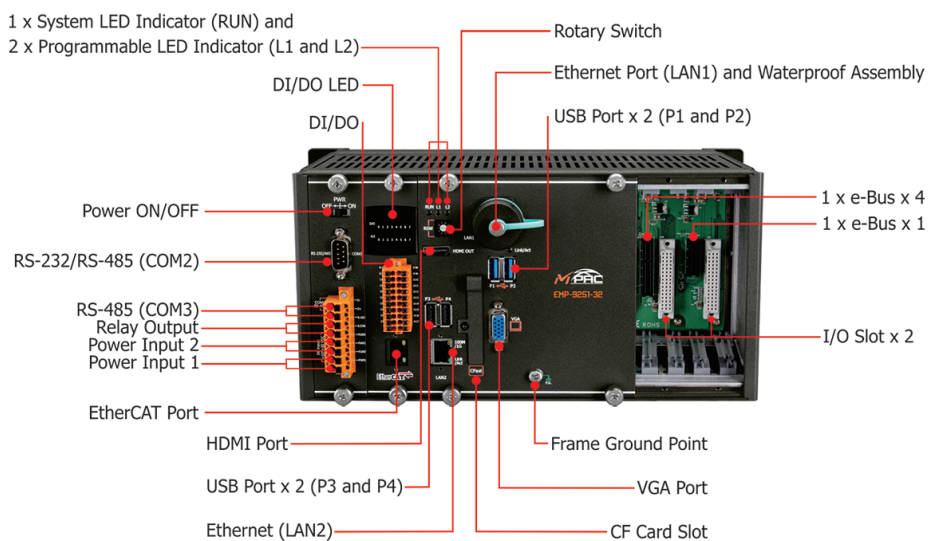


Appearance

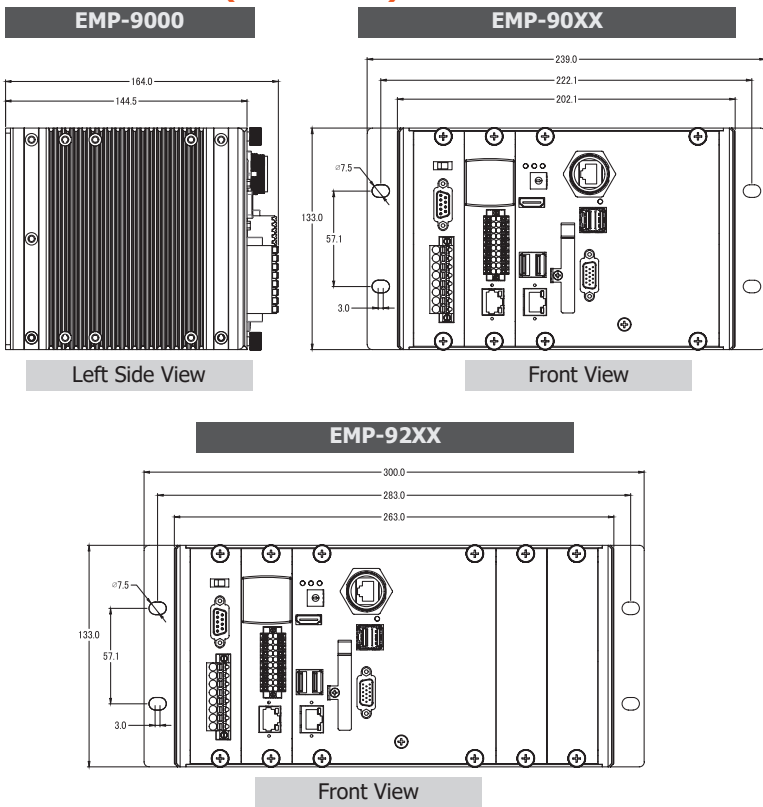
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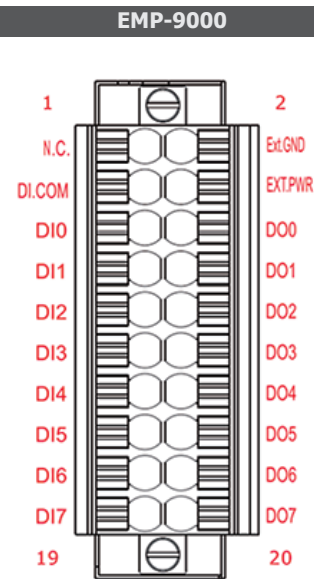
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■ Dimensions (Units: mm)



■ Pin Assignments



■ Wire Connections

Digital Input	Readback as 1	Readback as 0
	+19 ~ +24 V _{DC}	OPEN or < 11 V _{DC}
Sink		
Source		
Digital Output	ON State Readback as 1	OFF State Readback as 0
Driver Relay		
Resistance Load		

■ Ordering Information

EMP-9051-16	EtherCAT Master based 9000 series PAC with Intel i5-8365UE CPU and Windows 10 IoT(RoHS)
EMP-9051-32	EtherCAT Master based 9000 series PAC with Intel i5-8365UE CPU and Windows 10 IoT(RoHS)
EMP-9091-16	EtherCAT Master based 9000 series PAC with Atom E3950 CPU and Windows 10 IoT(RoHS)
EMP-9091-32	EtherCAT Master based 9000 series PAC with Atom E3950 CPU and Windows 10 IoT(RoHS)
EMP-9251-16	2 slot EtherCAT Master based 9000 series PAC with Intel i5-8365UE CPU and Windows 10 IoT(RoHS)
EMP-9251-32	2 slot EtherCAT Master based 9000 series PAC with Intel i5-8365UE CPU and Windows 10 IoT(RoHS)