

CK3E□

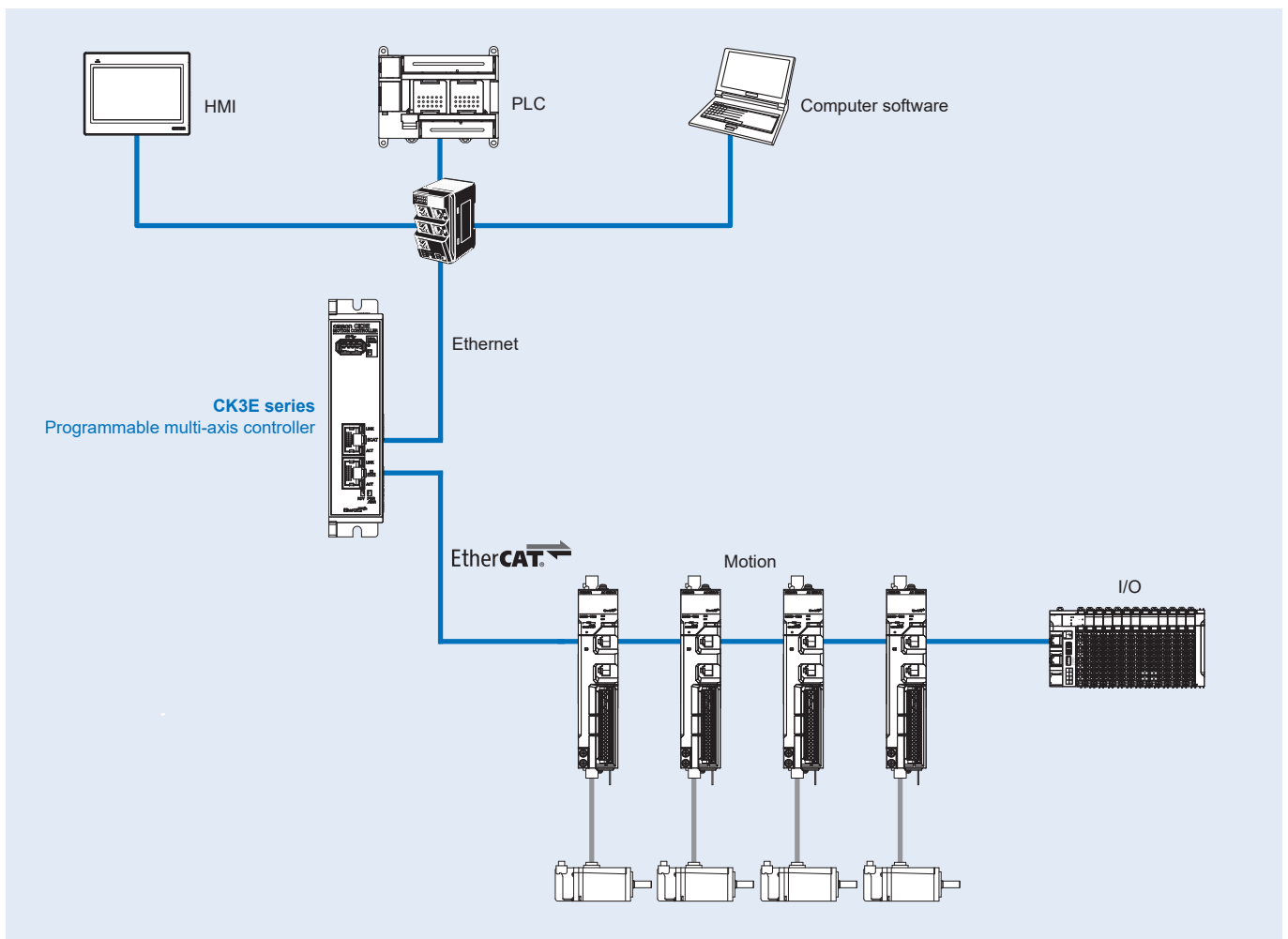
# Programmable multi-axis controller

**A powerful, flexible and cost-effective motion controller**

- Up to 32 axes motion control
- 250  $\mu$ s motion control period
- Flexible function development capability enables high-precision curve machining
- EtherCAT for flexible system configuration



## System configuration



Specifications

General specifications

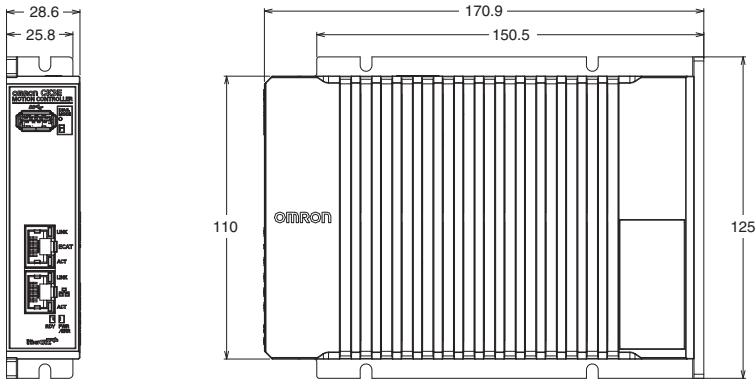
Item	Specifications	
Enclosure	Mounted in a panel	
Grounding method	Ground to less than 100 Ω	
Dimensions (H x W x D)	130.4 mm x 28.6 mm x 170.9 mm	
Weight	540 g	
Unit power supply rated voltage	24 VDC (20.4 to 26.4 VDC)	
Unit power supply current consumption	660 mA or less	
Environmental specifications	Ambient operating temperature	0 to 45°C
	Ambient operating humidity	10 to 95% RH (without condensation and icing)
	Ambient storage temperature	-25 to 70°C (without condensation and icing)
	Atmosphere	Must be free from corrosive gases
	Vibration resistance	Conforms to IEC 60068-2-6. 5 to 8.4 Hz with amplitude of 3.5 mm, 8.4 to 150 Hz, acceleration of 9.8 m/s <sup>2</sup> 100 min each in X, Y and Z directions (10 sweeps of 10 min each = 100 min total)
Shock resistance	Conforms to IEC 60068-2-27. 147 m/s <sup>2</sup> , 3 times each in X, Y and Z directions	
Applicable standards	EU: EN 61326, RCM	

Performance specifications

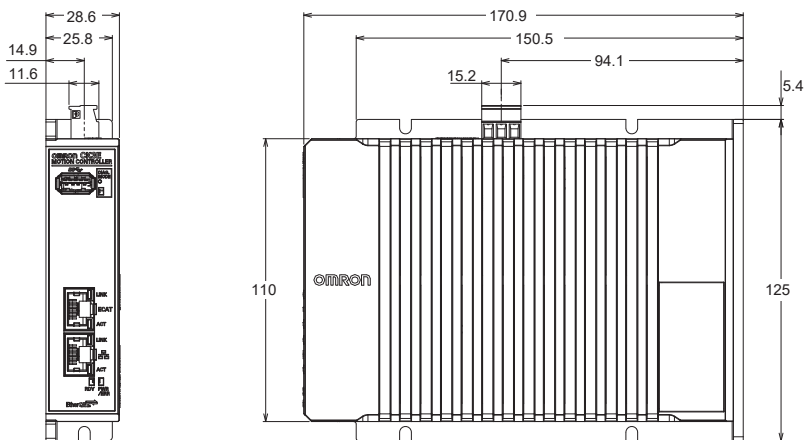
Model	CK3E-1210	CK3E-1310	CK3E-1410
Motion control	Number of controlled axes	8 axes	16 axes
	Motion control period	250 μs min.	
	Control method	Issuing control commands using EtherCAT communications	
Memory	Main memory: 1 GB Flash memory: 1 GB		
External terminals	Communications connectors		
	<ul style="list-style-type: none"> <li>For EtherCAT communications, RJ45 x 1 (shield supported)</li> <li>For Ethernet communications, RJ45 x 1 (shield supported)</li> </ul>		
	Power supply input terminal		
Communications	EtherCAT port	Protocol	EtherCAT protocol
		Baud rate	100 Mbps
		Physical layer	100BASE-TX (IEEE 802.3)
		Topology	Line, daisy chain and branching
		Transmission media	Twisted-pair cable of category 5 or higher (double-shielded straight cable with aluminum tape and braiding)
		Transmission distance	Distance between nodes: 100 m max.
		Number of slaves	32 max.
		Range of node addresses that can be set	1 to 32
	Ethernet port	Physical layer	1000BASE-T/100BASE-TX
		Frame length	1,514 bytes max.
		Media access method	CSMA/CD
		Modulation	Baseband
		Topology	Star
		Transmission media	Twisted-pair cable of category 5, 5e or higher (shielded cable)
	USB port	Transmission distance	100 m max. (distance between Ethernet switch and node)
Cascade connections		There are no restrictions if an Ethernet switch is used	
Physical layer		USB 3.0 compliant A-type connector Output voltage 5 V, 0.9 A max.	
	Transmission distance	3 m max.	

Dimensions

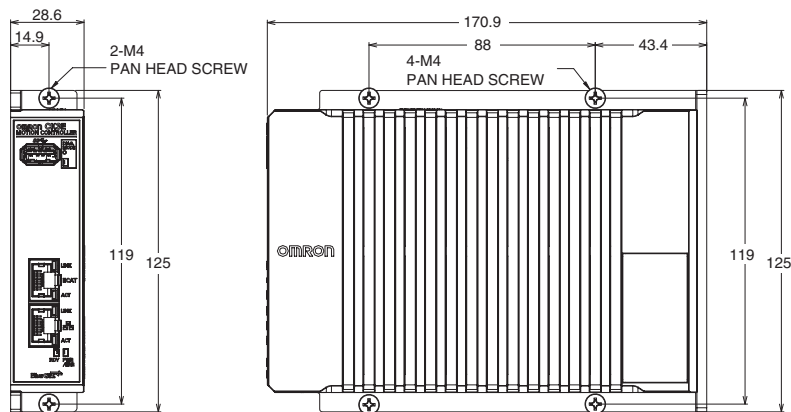
Main body



With power connector




Mounting dimensions



## Ordering information



### Programmable multi-axis controller




Item/Appearance	Memory	Communication ports	Number of axes	Model
	Main memory: 1 GB Flash memory: 1 GB	EtherCAT port: 1 Ethernet port: 1	8	CK3E-1210
			16	CK3E-1310
			32	CK3E-1410

### Accessories

Item	Specifications	Model
USB memory	2 GB	FZ-MEM2G
	8 GB	FZ-MEM8G
Power supply	Output voltage: 24 VDC	S8JX-□□□□24□□

### Recommended EtherCAT and EtherNet/IP communication cables

Item			Manufacturer	Colour	Cable length (m)	Model						
EtherCAT cable	Cat 5e, AWG22, 2-pair cable M12/Smartclick connectors Improved shield for EtherCAT communications	Standard type Cable with connectors on both ends (M12 straight/M12 straight)	OMRON	Black	0.5	XS5W-T421-BM2-SS						
					1	XS5W-T421-CM2-SS						
					2	XS5W-T421-DM2-SS						
					3	XS5W-T421-EM2-SS						
					5	XS5W-T421-GM2-SS						
					10	XS5W-T421-JM2-SS						
		Rugged type Cable with connectors on both ends (M12 straight/RJ45)			Black	0.5	XS5W-T421-BMCSS					
						1	XS5W-T421-CMC-SS					
						2	XS5W-T421-DMC-SS					
						3	XS5W-T421-EMC-SS					
						5	XS5W-T421-GMC-SS					
						10	XS5W-T421-JMC-SS					
						Ethernet/ EtherCAT patch cable	Cat 6a, AWG27, 4-pair cable Cable sheath material: LSZH <sup>1</sup>  <b>Note:</b> This cable is available in yellow, green and blue colours.	Standard type Cable with connectors on both ends (RJ45/RJ45)		Yellow	0.2	XS6W-6LSZH8SS20CM-Y
											0.3	XS6W-6LSZH8SS30CM-Y
0.5	XS6W-6LSZH8SS50CM-Y											
1	XS6W-6LSZH8SS100CM-Y											
1.5	XS6W-6LSZH8SS150CM-Y											
2	XS6W-6LSZH8SS200CM-Y											
3	XS6W-6LSZH8SS300CM-Y											
5	XS6W-6LSZH8SS500CM-Y											
7.5	XS6W-6LSZH8SS750CM-Y											
10	XS6W-6LSZH8SS1000CM-Y											
15	XS6W-6LSZH8SS1500CM-Y											
20	XS6W-6LSZH8SS2000CM-Y											
Green		0.2	Green	0.2	XS6W-6LSZH8SS20CM-G							
				0.3	XS6W-6LSZH8SS30CM-G							
				0.5	XS6W-6LSZH8SS50CM-G							
				1	XS6W-6LSZH8SS100CM-G							
				1.5	XS6W-6LSZH8SS150CM-G							
				2	XS6W-6LSZH8SS200CM-G							
				3	XS6W-6LSZH8SS300CM-G							
				5	XS6W-6LSZH8SS500CM-G							
				7.5	XS6W-6LSZH8SS750CM-G							
				10	XS6W-6LSZH8SS1000CM-G							
				15	XS6W-6LSZH8SS1500CM-G							
				20	XS6W-6LSZH8SS2000CM-G							
				Green	Cat 5e, AWG26, 4-pair cable Cable sheath material: PUR <sup>1</sup>	Standard type Cable with connectors on both ends (RJ45/RJ45)		Green	0.5	XS6W-5PUR8SS50CM-G		
									1	XS6W-5PUR8SS100CM-G		
1.5	XS6W-5PUR8SS150CM-G											
2	XS6W-5PUR8SS200CM-G											
3	XS6W-5PUR8SS300CM-G											
5	XS6W-5PUR8SS500CM-G											
7.5	XS6W-5PUR8SS750CM-G											
10	XS6W-5PUR8SS1000CM-G											
15	XS6W-5PUR8SS1500CM-G											
20	XS6W-5PUR8SS2000CM-G											

Item		Manufacturer	Colour	Cable length (m)	Model		
Ethernet/ EtherCAT patch cable	Cat 5e, AWG22, 2-pair cable	OMRON	Grey	0.3	XS5W-T421-AMD-K		
				0.5	XS5W-T421-BMD-K		
				1	XS5W-T421-CMD-K		
				2	XS5W-T421-DMD-K		
				3	XS5W-T421-EMD-K		
				5	XS5W-T421-GMD-K		
				10	XS5W-T421-JMD-K		
				15	XS5W-T421-KMD-K		
				Rugged type Cable with connectors on both ends (RJ45/RJ45)		Grey	0.3
			0.5				XS5W-T421-BMC-K
			1				XS5W-T421-CMC-K
			2				XS5W-T421-DMC-K
			3				XS5W-T421-EMC-K
			5				XS5W-T421-GMC-K
			Rugged type Cable with connectors on both ends (M12 straight/RJ45)		Grey	0.3	XS5W-T421-JMC-K
						0.5	XS5W-T421-KMC-K
						1	XS5W-T422-AMC-K
						2	XS5W-T422-BMC-K
3	XS5W-T422-CMC-K						
5	XS5W-T422-DMC-K						
Rugged type Cable with connectors on both ends (M12 L right angle/RJ45)		Grey	0.3	XS5W-T422-EMC-K			
			0.5	XS5W-T422-GMC-K			
			1	XS5W-T422-JMC-K			
			2	XS5W-T422-KMC-K			
			3	XS5W-T422-AMC-K			
			5	XS5W-T422-BMC-K			

<sup>11</sup> The lineup features low smoke zero halogen cables for in-cabinet use and PUR cables for out-of-cabinet use.

**Note:** Please be careful while cable processing, for EtherCAT, connectors on both ends should be shield connected and for EtherNet/IP, connectors on only one end should be shield connected.

### Support software

Item	Description
Power PMAC IDE <sup>11</sup>	This computer software is used to configure the controller, create user programs and debug programs. This is a free software, contact your OMRON representative for information on how to procure.
Power PMAC-NC16 SDK	This computer software is used to control working machines and other CNC machines with the controller. Use this software when you want to customize the HMI screen. The product contains extension source codes used for customization. This is a non-free software, contact your OMRON representative for information on how to procure.
Power PMAC-NC16 Runtime	This computer software is used to control working machines and other CNC machines with the controller. Use this software when you do not customize the HMI screen. This is a non-free software, contact your OMRON representative for information on how to procure.
EC Engineer	This computer software is used to configure and monitor the EtherCAT network by using the controller as the EtherCAT master. This is a free software, contact your OMRON representative for information on how to procure.

<sup>11</sup> Power PMAC IDE version 2.2 or higher is needed.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.  
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.