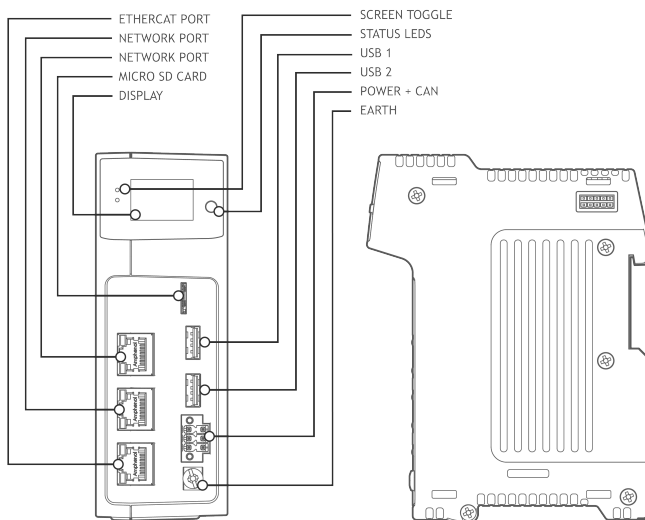




A MEMBER OF THE **ESTUN** GROUP



# QUICK START GUIDE

## FLEX-7

P770

## **A SAFETY WARNING**

During the installation or use of control systems, users of Trio products must ensure that there is no possibility of injury to any person or damage to machinery.

Control systems, especially during installation, can malfunction or behave unexpectedly. Bearing this in mind, users must ensure that even in the event of a malfunction or unexpected behaviour, the safety of an operator or programmer is never compromised.

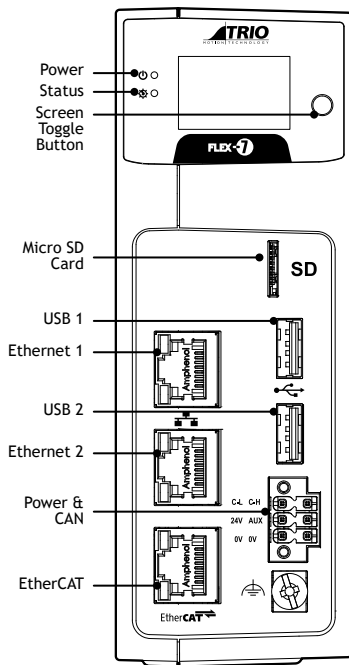
### **FLEX-7 (P770)**

The P770 Flex-7 is a high specification programmable *Motion Coordinator* in a compact format for DIN rail mounting. It is expandable through the matching Flexslice range of Input, Output and Axis modules which can be easily added by clipping to the side of the Flex-7. In addition, there is one EtherCAT port (RJ45) for connection of EtherCAT slave devices including servo and stepper drives, I/O and other functionality that conforms to the EtherCAT standard.

A micro SD card slot is provided for memory expansion, software updates and application use. Programming and system commissioning is done by connecting over a network a PC running *Motion Perfect* to the other Ethernet socket.

### **CONNECTIONS**

Power Supply (24V-IN)	21-29V dc Class 2 transformer or power supply, 1A min
Power Supply (24V-AUX)	18-29V dc Class 2 transformer or power supply, 1A min
Ethernet	RJ45
EtherCAT	RJ45
Recommended screened cable for EtherCAT; Cat5e SF/UTP minimum	

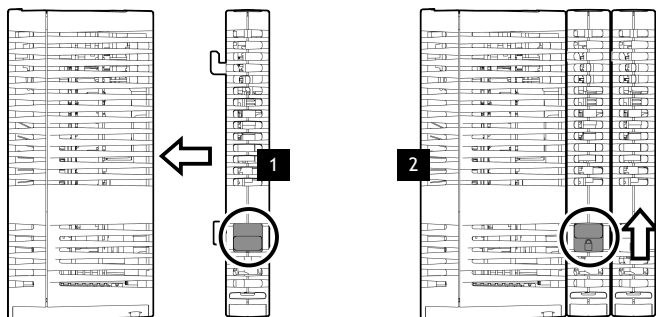


## ASSEMBLING THE SYSTEM

One station consists of a P770 Flex-7 and up to 16 Flexslice EtherCAT modules.

Note: The below image shows the top view of the modules.

1. Ensure the “click-to-lock” mechanism is not locked. Align a Flexslice Module against the right hand side of the P770 Module.
2. Slide back to lock the “click-to-lock” mechanism (top and bottom) into position.



Removal of Flexslices is the opposite of this procedure.

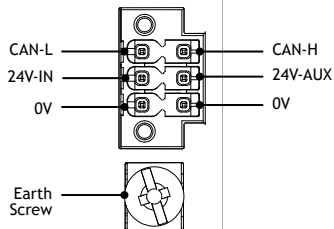
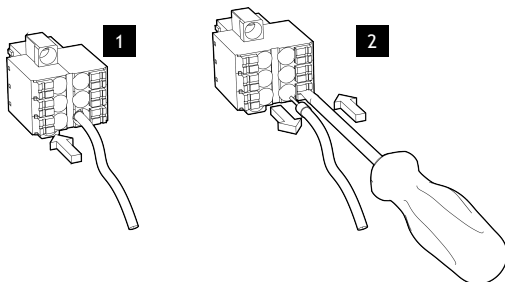
The complete assembly can be DIN rail mounted.

## CONNECTORS

Power (24V) and CAN Connector:

Note: Use copper conductors only. Use ferrules on all wires for best connection.

1. Connection: Push wire into hole of connector. No tools are necessary.
2. Removal: Push screwdriver against coloured button to release wire and pull wire out.



## LED'S

Power	Green power LED	Processor Running
Status	Red LED	ON = WDOG Off OFF = WDOG On

## RJ45 ETHERNET PORT (X2)

Standard 1000 Base-T Ethernet ports are provided for use as the primary programming interface.

The Trio programming software, *Motion Perfect 5.2.3* or higher, must be installed on a Windows based PC that is fitted with an Ethernet connection.

The Standard Ethernet port may also be used for Ethernet-IP, Modbus and other factory communications.

Both Ethernet ports share the same IP address.

The default IP address is: 192.168.0.250



## ETHERCAT PORT

The Flex-7 acts as an EtherCAT master. EtherCAT drives and I/O devices are normally connected in a chain.

Ethernet standard pin assignment:

Pin	Signal	Description
1	TD+	Transmission data +
2	TD-	Transmission data -
3	RD+	Receive data +
6	RD-	Receive data -



Straight through (patch) or cross-over cables can be used between EtherCAT devices. Minimum CAT 5e shielded SF/UTP cable is recommended for use on EtherCAT and Ethernet ports.



All shielded cable ends **MUST** have their screen bonded (conductive P-Clipped) to a earthed chassis back plate or similar.

## ETHERCAT NETWORK DETECTION

Intelligent drives

Slot 0 - EtherCAT

Diagram

Master state: Operational Diagnostics Disabled

Address: 1000 1001 1002 1 2

Axis: 0 1

Details

Drives

Axis	Ctrl Mode	Model	Pos	Alias	Configured
0	ECAT Pos	TRIO DX4	4	0	1
1	ECAT Pos	TRIO DX4	5	0	2

Other devices

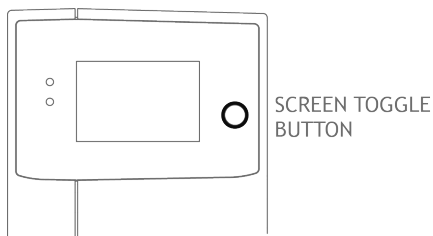
Model	Pos	Alias	Configured
P770	0	0	2000
P372 DIN 16 PNP	1	0	1000
P371 DOUT 16 PNP	2	0	1001
P379 AIN 8 (rev 2)	3	0	1002

Modify STARTUP Program Browse database...

*EtherCAT Intelligent drives Window in Motion Perfect.*

## DISPLAY

The Flex-7 display features a number of display modes. The modes can be accessed by pressing the toggle button.



After 1 minute of idle time, the display will revert to screensaver mode (scrolling logo). Pressing the screen toggle button will return the display to the last display mode.

## MODES

#	Short Press	Long Press
1	Ethernet Information	N/A
2	EtherCAT Information	N/A
3	Device Information	N/A
4	Process Summary	N/A
5	Digital Inputs	Cycle inputs and summary
6	Digital Outputs	Cycle iutputs and summary

## NETWORK SETUP

### NETWORK CONNECTION

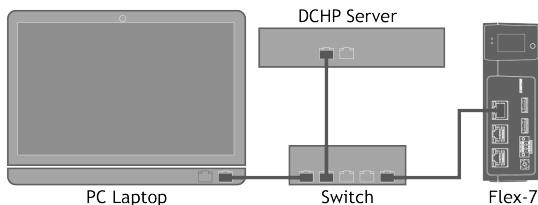
Set IP\_ADDRESS in Flex-7 to an available unused address.

The default IP\_ADDRESS = 192.168.0.250.

It **MUST** match the subnet in use. Set the PC to use DHCP server.



**The Flex-7 always has a fixed IP address.**



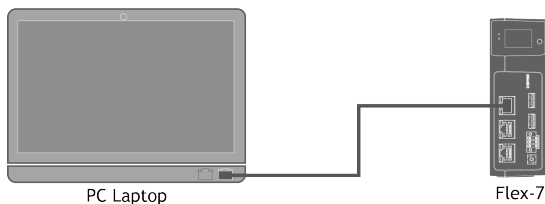
### POINT-TO-POINT OR CLOSED NETWORK

(No DHCP server)



**The PC MUST be set to a fixed IP\_ADDRESS.**

The first 3 "octets" **MUST** be the same as the Flex-7 and the last **MUST** be different, but not 000, 254 or 255.





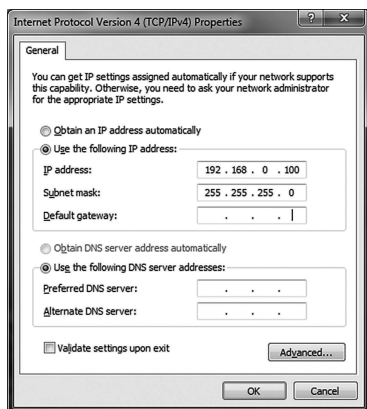
## SETTING A FIXED IP ADDRESS

In Windows 10 and above.

Open “Network & Internet” then change “Adapter Options”.

Select the properties of the Local Area Network and the IPv4 properties.

The IP Address is set to 192.168.0.100 with subnet mask set to 255.255.255.0. Assuming that the Flex-7 has IP\_ADDRESS=192.168.0.250 or similar.





## EXPANDING THE FLEXSLICE SYSTEM

The Flexslice system makes available a selection of digital and analogue I/O terminals as well as motion modules with pulse + direction outputs designed for precise positioning of stepper and servo motors via suitable drive technology. The digital I/O modules have high-speed functionality and can sample each EtherCAT cycle, or use distributed clocks for greater accuracy. In addition, analogue modules and axis modules may be fitted to make a superbly tailored system that can be placed remotely from the master if needed.

All Flexslice modules support automatic addressing with the master able to automatically detect and configure the modules on startup. The Flex-7 supports up to 16 input/output modules which have a positive mechanical lock and bus connector, making a reliable “back-bone” style connection (EBUS). The complete assembly can be DIN rail mounted.

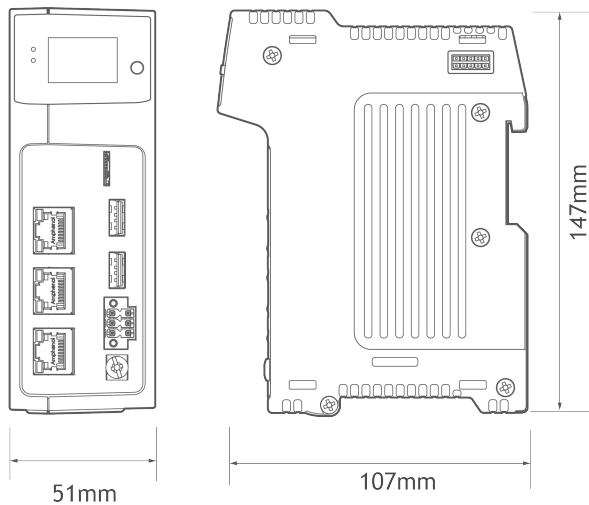




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## DIMENSIONS



TRIO MOTION TECHNOLOGY  
UK | USA | CHINA | INDIA | EUROPE  
[WWW.TRIOMOTION.COM](http://WWW.TRIOMOTION.COM)

CAD data Drawings to aid packaging and mounting are available in various formats from the Trio web site. Products should be wired by qualified persons. Specifications may change without notice. E & OE

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