

Trio Motion Technology Ltd.  
Shannon Way, Tewkesbury,  
Gloucestershire. GL20 8ND  
United Kingdom  
Tel: +44 (0)1684 292333  
Fax: +44 (0)1684 297929

1000 Gamma Drive  
Suite 206  
Pittsburgh, PA 15238  
United States of America  
Tel: +1 412.968.9744  
Fax: +1 412.968.9746

Tomson Centre  
118 Zhang Yang Rd., B1701  
Pudong New Area, Shanghai,  
Postal code: 200122  
P. R. CHINA  
Tel/Fax: +86-21-58797659



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**Subject:** Multiple Ethernet Connections

## APPLICATION NOTE

[www.triomotion.com](http://www.triomotion.com)

### 1. Applicability

The MC464 and Euro209 Motion Coordinators share the same “Coldfire” communications processor which supports multiple “Sockets” over the same Ethernet IP Address. This application note is a summary of this functionality.

The P296 Ethernet Daughter Board is a Single Socket only implementation of Ethernet so it will **not** support the opening of multiple connections described in this application note.

### 2. Concepts

#### 2.1. Client

The PC or other “master” processor that is connected to the Ethernet network

#### 2.2. Server

The “slave” node on the Ethernet network. All Trio Motion Coordinators are *servers*. They wait for a *client* to open a connection and then provide the required service to the *client*.

#### 2.3. IP Address

Ethernet connections have common parts which are the same for any Ethernet Node. The IP address for example is allocated to an Ethernet Node and any communications traffic for that node must use the IP address in order to access it.

#### 2.4. Port Number

A client PC which wants to access the server node (MC464 or Euro209) must first open a TCP/IP port in the server. Ports are allocated specific numbers according to the type of function required. For example Port 23 opens a Telnet session with the server node. Here are some more port numbers and their uses:

Port 23: Telnet - connects to the command line in the Motion Coordinator. Used by Motion Perfect to edit and debug programs.

- Port 502: Modbus TCP - opened by a Modbus master to allow it to exchange data with the server.
- Port 3240: TrioPC ActiveX - opened by a TrioPC application to start a synchronous connection between the PC application and the Motion Coordinator Remote Program.

All port numbers are allocated by the responsible International Body. A full list can be viewed on the Internet. Trio Motion Coordinators only support the Port numbers that correspond to functions that are implemented. Other port numbers will be rejected.

### 2.5. Socket

A server node on Ethernet can allow more than one client to open a port at the same time. This is known as having multiple “sockets” available. These sockets are not real connections for wires, but are a virtual connection path. There is, of course, only one real live connector for the Ethernet cable.

The P296 Ethernet daughter board is a “single socket” node. Only one connection can exist at any time.

The MC464 and Euro209 allow multiple sockets to be opened, either from the same client or from multiple clients. So two PCs can access the same Motion Coordinator, one using Modbus TCP and the other using the Telnet port for example. (for Motion Perfect)

## 3. Connection / Function Table

The MC464 and Euro209 support slightly different sets of connection types. The MC464, being a higher level controller supports more advanced functions that are not available on the Euro209.

	MC464	Euro209	# of instances
TELNET	✓	✓	1
MODBUS TCP	✓	✓	1
TrioPC ActiveX	✓	✓	1
TEXT FILE LOADER	x	✓	1
ETHERNET IP (CIP)	✓	x	2
OPEN PLC (IEC 61131)	✓	x	1

Notes: Only one instance of each connection allowed, except for Ethernet IP.

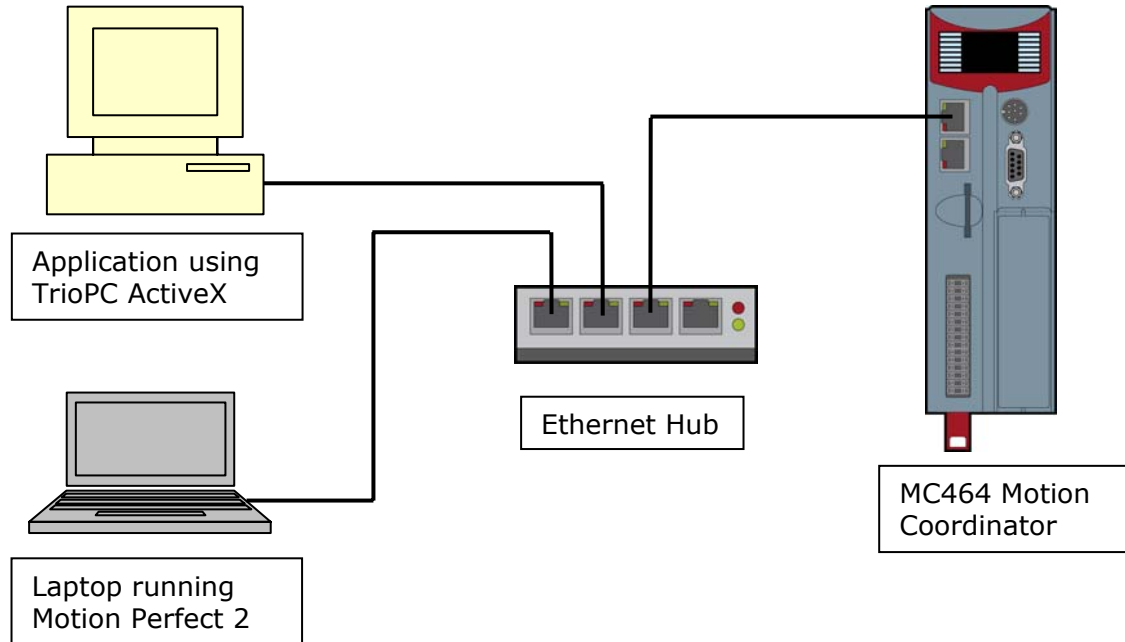
Text File Loader is a special protocol for rapid loading of, for example, HPGL programs.

CIP stands for Common Industrial Protocol.

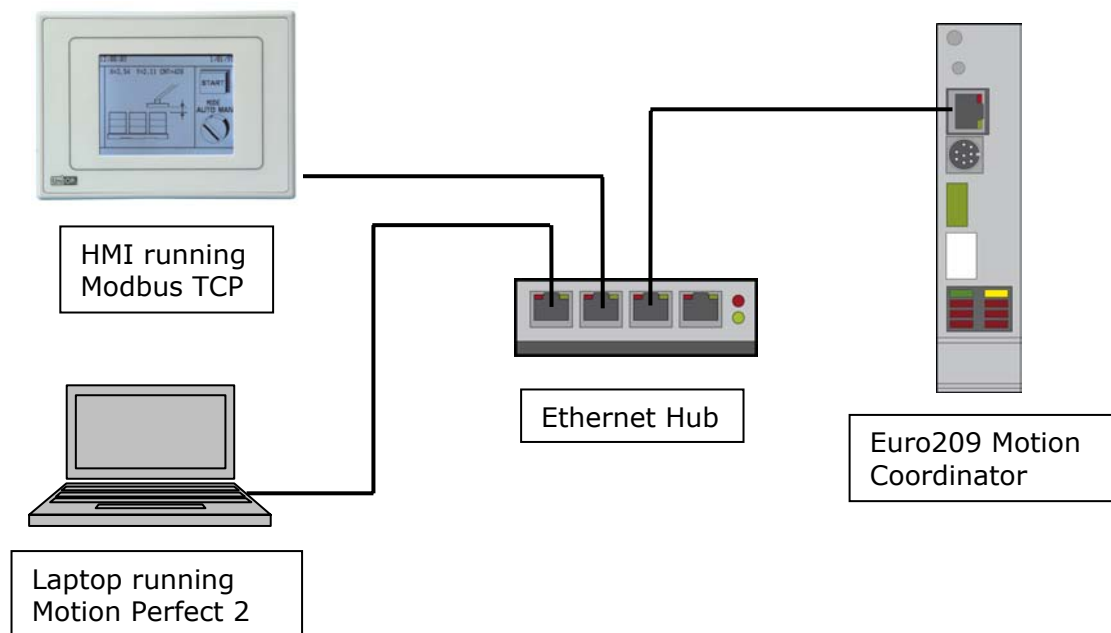
Open PLC is a port for connection of the MultiProg IEC 61131 programming software.

## 4. Examples

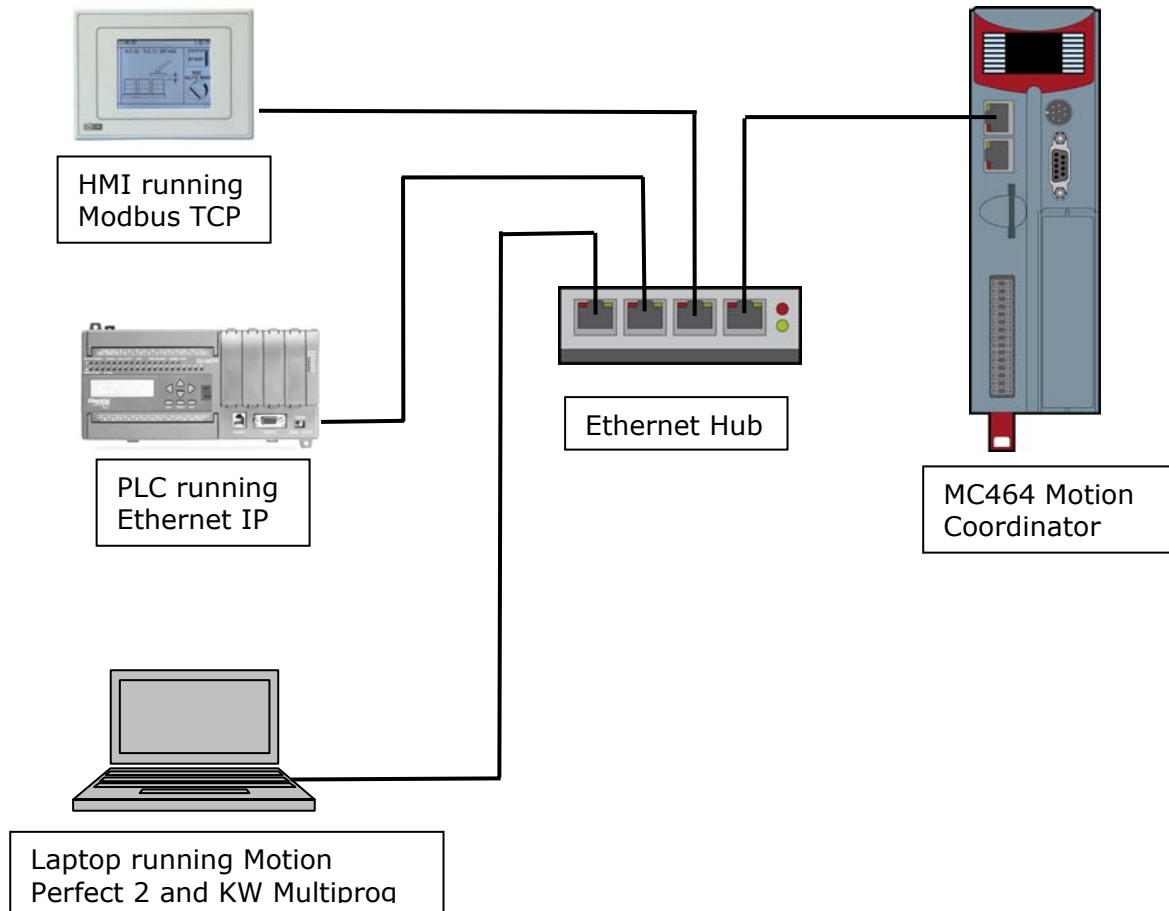
### 4.1. Two different PCs connected to one MC464



### 4.2. HMI and PC connected to Euro209



### 4.3. Multiple Clients to one MC464



## 5. Summary

Multiple Ethernet Clients are allowed to connect to a single MC464 or Euro209 using the same IP address.

Connection is automatic when the Client opens the port into the Motion Coordinator.

Only one instance of each connection can be opened. i.e. you cannot have 2 PCs both running Motion Perfect connected to the same MC464.

Ethernet IP allows for 2 instances, so 2 PLCs, or 1 PLC and 1 HMI can connect using Ethernet IP at the same time.

All connections can be opened without any special configuration of the Motion Coordinator.

Some configuration of the Modbus TCP connection is optional to configure the memory area and data type. See the ETHERNET command for details.

The P296 daughter board is NOT covered by this application note.