Using the Ethernet Port

Types of Addressing

The IP address can be configured in one of three ways:

- Fixed IP
- DHCP
- BOOTP

For fixed IP addresses, the address is simply entered into the configuration section, along with the Subnet mask and Gateway if required. For DHCP or BOOTP there must be a DHCP or BOOTP server on the network to give the device its address.

Fixed IP

With Fixed IP addressing, the IP address and subnet mask are entered as part of the M221 application configuration. The gateway can also be configured if required. This means that the M221 has a known IP address but does require management of the IP address if the M221 is on anything but a small network.

Enter the required address details into the configuration form and click the **Apply** button.

DHCP

DHCP uses a DHCP server to manage IP addresses so is much easier to configure within the M221. It is simply a case of selecting the DHCP Radio button.

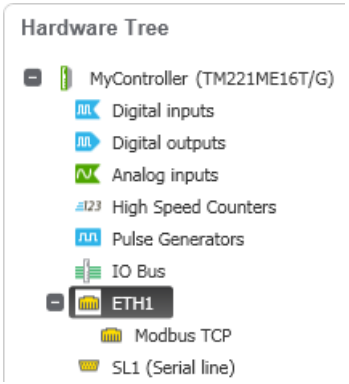
If there is just one M221 on the network it can be easily identified. Device discovery in the Connection tab will show the network address of the M221 which can be selected to allow the software to connect to the controller.

If there are more controllers, then the network addresses of all the controllers will be visible. Currently it is difficult to distinguish between controllers as they do not announce their device name. The current work-around is to use USB to ensure that the correct controller is being programmed. This will be addressed in a future release of the software.

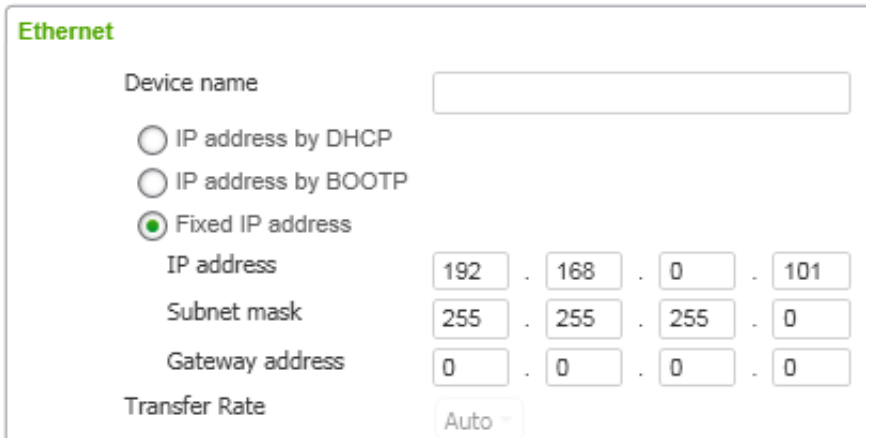
Using the Ethernet Port (cont.)

How to Set the IP Address

The IP address is configured as part of the hardware configuration on the configuration page. Select **ETH1** from the **Hardware Tree.**



The Ethernet configuration will be displayed.



Choose the required options and click the **Apply** button.

Exercise - Ethernet Connection

Learning Outcomes

By the completion of this exercise you will:

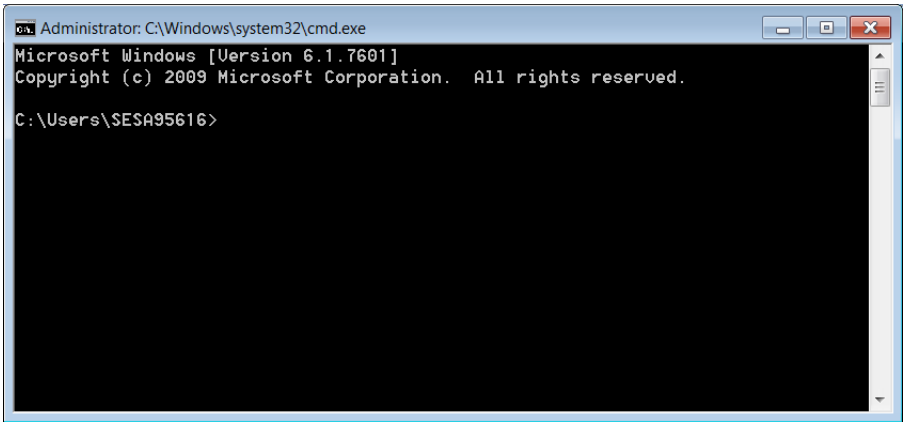
- Configure the Ethernet connection to download and commission an application

1 Find the IP address of the programming computer.

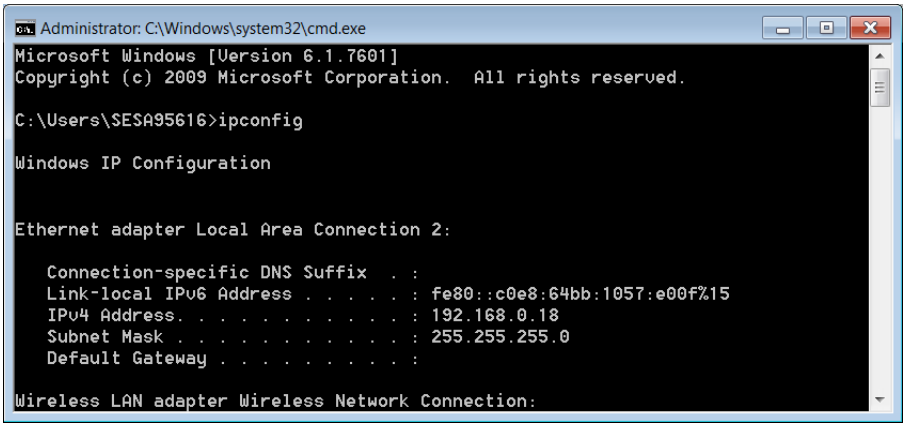
i. If using Windows XP, go to the Start menu select Run.

If using Windows Vista or 7, go to the start menu and click the search box.

ii. Type CMD and press enter.



iii. In the command prompt window enter the command ipconfig.



There may be more than one adapter each with its own configuration. Look for the one that is connected to the network containing the M221. This will most likely be the one labelled "Local Area Connection".

Exercise - Ethernet Connection (cont.)

iv. The two numbers required are the IP (or IPV4) address and the subnet mask. Write them in the first two rows of the table below.

Programming Computer IP Address	
Subnet Mask	
M221 IP Address	

v. The subnet mask for the M221 will be the same as the subnet mask for the programming computer.

vi. The IP address for the M221 will be in the same IP range as the programming computer. To determine this apply the following rules. Where the subnet mask is not equal to zero, then the IP number must be the same. Where the subnet mask is equal to zero, the IP number will be different and a free number on the network. An example is given below.

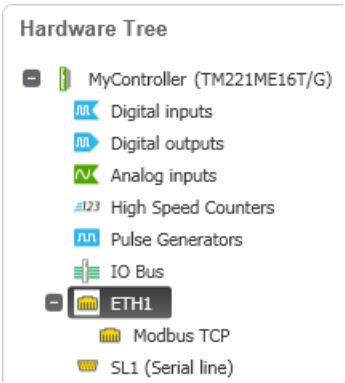
Programming Computer IP Address	192 . 168 . 0 . 4
Subnet Mask	255 . 255 . 255 . 0
M221 IP Address	192 . 168 . 0 . 101

vii. Enter your own IP address into the third row of the first table in step (iv).

2 Configure the Ethernet Port.

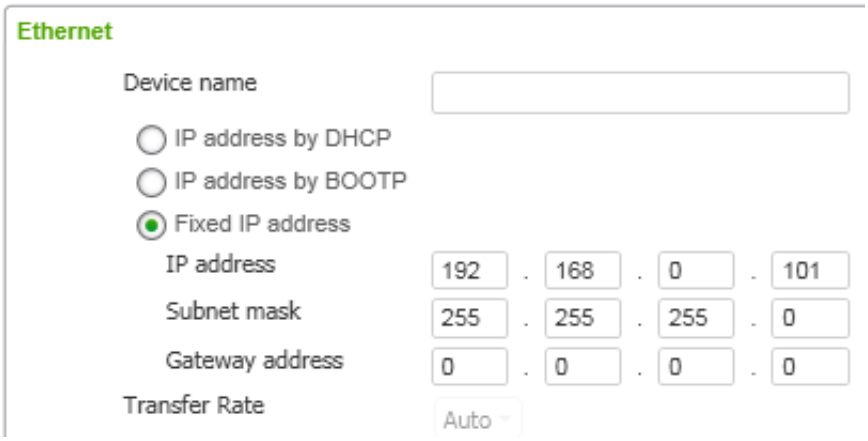
i. Use the USB cable to connect to the M221 Logic Controller.

ii. Go to the configuration tab and from the Program Tree select **ETH1.**



Exercise - Ethernet Connection (cont.)

iii. Select the **Fixed IP address** radio button and enter the M221 IP Address and Subnet Mask from the table in step 1(iv) on the previous page. The screenshot below shows the Ethernet address configured from the example table.



Note:

If you are on a large network do not continue with the exercise. The steps so far show how to configure the IP address but continuing may cause a duplicate IP address on the network.

iv. Click the **Apply** button.

Exercise - Ethernet Connection (cont.)

3 Download to the M221 controller.

i. Connect to the M221 Logic Controller via USB and download the application.

ii. When the download has completed run the controller.

iii. Disconnect the USB cable

4 Reconnect via Ethernet

i. Connection can be made in two ways. Either:

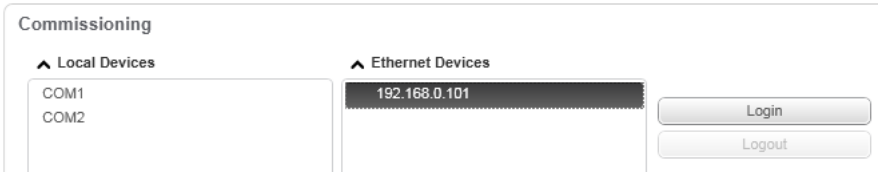
Connect an Ethernet cable to the Ethernet port on the front of the M221 Logic Controller and an existing switch on the network.

or

Connect a crossover cable to the Ethernet port on the front of the M221 Logic Controller and plug the other end directly into the Ethernet port of the programming computer.

ii. SoMachine Basic will recognise the Ethernet connection and display the Ethernet address in the Ethernet Devices column.

Select the IP address and click the **Login** button.



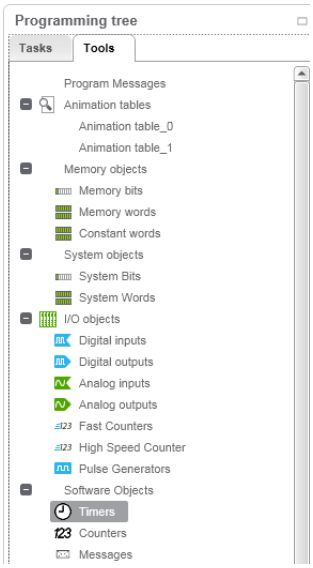
iii. Go to the **Programming** tab and observe the status of the objects in the program and animation tables to confirm that SoMachine Basic is communicating with the M221 Logic Controller.

Exercise - Ethernet Connection (cont.)

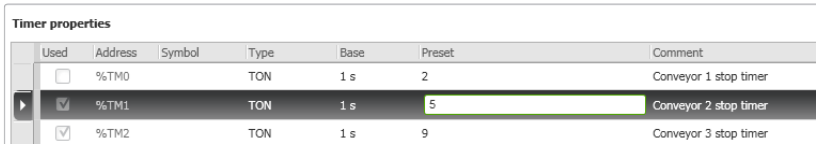
5 Program the M221 Logic Controller using the Ethernet connection.

i. Go to the **Commissioning** tab and logout from the controller.

ii. Go to the **Program** tab and select **Timers** from the **Program tree**



Change the time value for one of the conveyor stop timers.



iii. Go back to the **Commissioning** tab, make sure the Ethernet connection is still selected and login. Transfer the program as before.