ICC-402 Ethernet

ICC-402 Ethernet

The ICC-402 series controllers are available with two Ethernet options for Com port 1. They can be supplied with an ASCII Ethernet interface or with a Modbus/TCP Ethernet interface.

ASCII

The ASCII Ethernet option allows the ICC-402 controller to communicate over a local or wireless area network using the Texmate ASCII communication protocol. This protocol is included in all of Texmate's development tools, and allows the ICC-402 to be accessed from the the Texmate Development System (TDS), the Texmate Configuration Utility and the Texmate Data Viewer.

Modbus/TCP

The Modbus/TCP Ethernet option allows the ICC-402 controller to communicate as a slave or master over a local or wireless area network using the industry standard Modbus protocol. This protocol is included in the Texmate Configuration Utility and the Texmate Data Viewer. (NB: The TDS does not include a Modbus communication option).

In order for the ICC-402 to operate correctly with any of the above Ethernet options, both of the ICC-402's serial and network options must be correctly configured,

Configuration of ICC-402 Serial Options

ASCII

When using the ASCII Ethernet option the serial operating mode for Com port 1 should be set to 'E_NET' (mode 4) and the controller address should be set to match the address value used in the Texmate Configuration Utility or the Texmate Data Viewer application.

Modbus/TCP

When using the Modbus/TCP Ethernet option the serial operating mode for Com port 1

should be set to **MODBUS** for a Modbus RTU slave (mode 1) or **MB_MST** for Modbus RTU master (mode 7). Recommended baudrate settings are 115,200 baud, no parity, transmit delay=2mS. The controller address should be set appropriately for the Modbus network. Serial options can be configured by one of the following methods:

Keypad Display

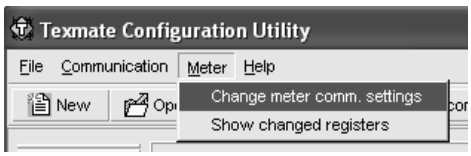
If your ICC-402 has been supplied with the LED or LCD keypad/display option then you can check the serial options as follows:

A. Press the [P] and [▲] buttons together.
B. Press the [P] button until the display shows **CAL**.
C. Using the [▲] and [▼] buttons adjust the Cal value to **201** and then press [P].
D. Using the [▲] and [▼] buttons change the mode to **E_NET** if you are using the ASCII Ethernet option or to **MODBUS** (Modbus slave) or **MB_MST** (Modbus master) if you are using the Modbus/TCP Ethernet option.
E. Use the [P] and [▲]/[▼] buttons to edit the following serial parameters as specified above.
F. When finished set **CAL** back to **000** and then keep pressing the [P] button to exit the setup mode and return to the normal display (or press the [P] and buttons together to quickly exit the setup mode).

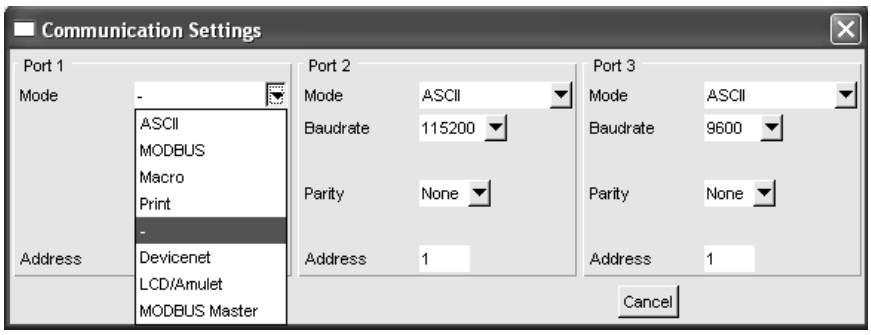
Texmate Configuration Utility

Use the standard Texmate serial cable to connect the serial port of your PC to com port 2 on the ICC-402. (Make sure that com port 2 on the ICC-402 is set to the default mode of ASCII, 115,200 baud, no parity).

A. Run the Texmate Conifugration Utility application on your PC.
B. Open a new connection to the ICC-402 controller. (Download the Texmate Configuration Utility Quick-start Guide for more info. at: www.texmate.co.nz).
C. Click on the 'Meter' button in the tool bar and select the 'Change meter comm. settings' option as shown below.



D. Click on the Mode options for port 1 and select either 'Ethernet', 'MODBUS', or 'MODBUS Master' as required. (Note: In older versions of the Texmate Configuration Utility, the Ethernet option is shown as a hyphen '-'). Set up the serial address of the controller to the desired address and then click OK.



Macro Configuration

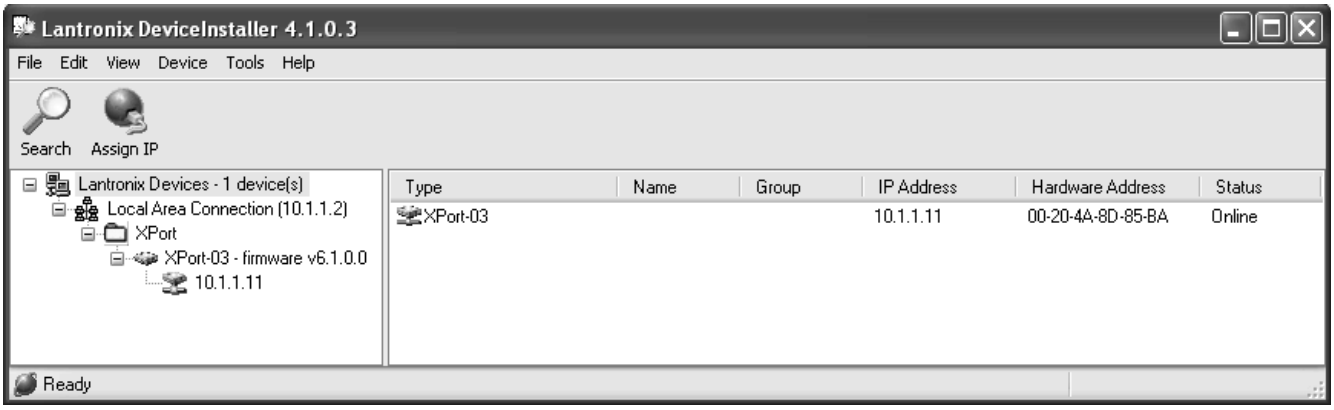
For advanced users, the serial port can also be configured by embedding commands into the macro source file. The following lines should be included:

```
mem &SERIAL_MODE1=4      //1=Modbus slave, 4= ASCII Ethernet, 7=Modbus master
mem &SERIAL_ADDRESS1=1
mem &BAUDRATE1=7         // 115200 baud, no parity, 2mS Tx delay
```

Configuration of Network Options

The network options can only be configured via the network TCP connection. They cannot be configured from the ICC-402 directly or from any of the other Texmate development tools. To help you configure the network options a free program called 'Device Installer' is available for download from Lantronix:
http://www.lantronix.com/device-networking/utilities-tools/device-installer.html

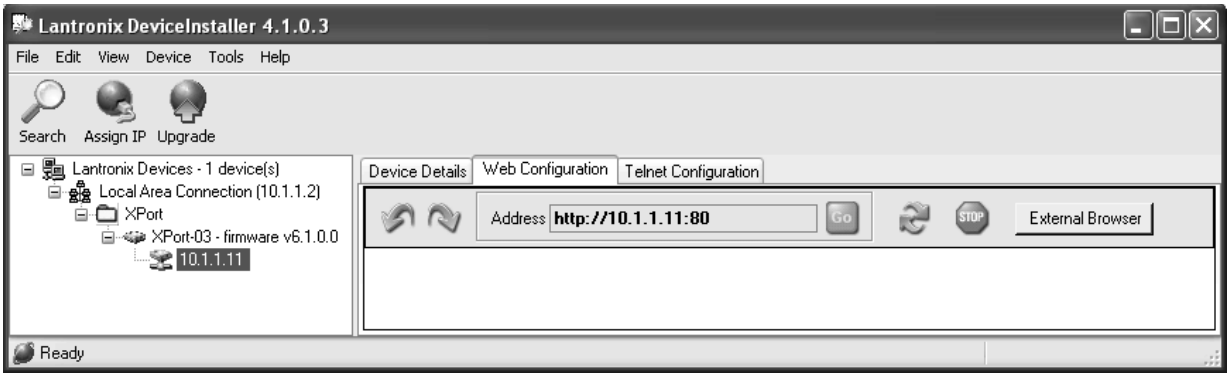
Once you have installed the 'Device Installer' application, connect the ICC-402 controller to the Ethernet network and turn it on. When you run the device installer application, it will immediately start searching the network for any connected devices and display the ones that it finds as shown below.



NOTE: All ICC-402's with Ethernet are DHCP enabled by default - this allows the server to resolve an IP adddress for the device. If you change the IP address from a dynamic address to a fixed address, it may become undetectable on the network if the IP address or subnet mask do not match those of your current network.

Configuration of the ASCII Ethernet Option

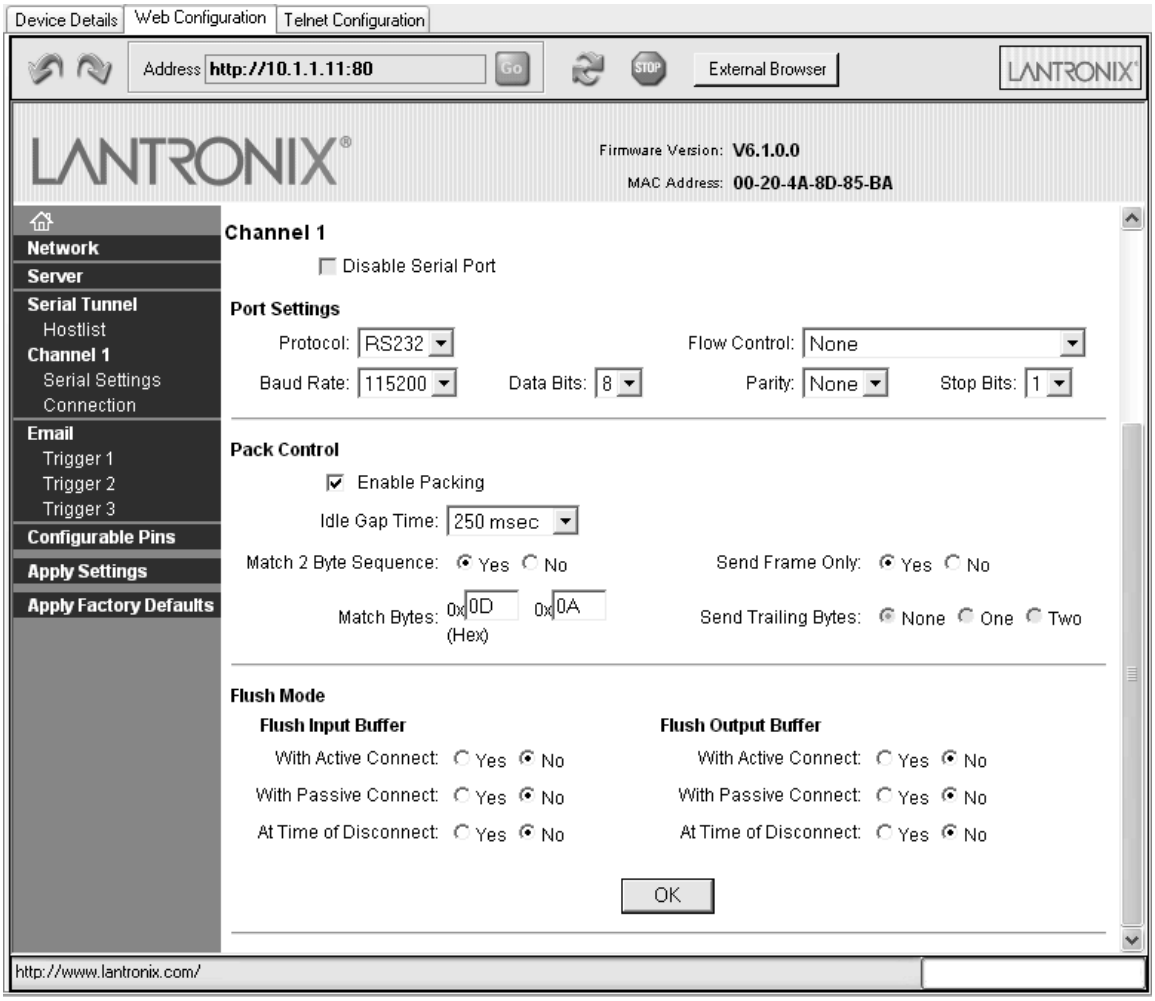
If you are using the ASCII ethernet option, click on the IP address of the device shown in the left frame. Then select the 'Web Configuration' tab at the top of the right frame as shown overleaf.



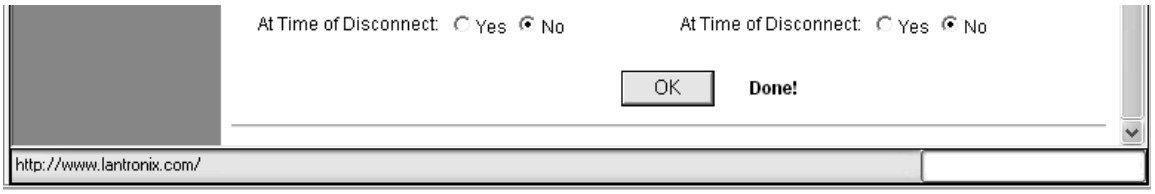
Click the green 'Go' button (see above).

When the dialog box pictured on the right is displayed, you may choose to either click 'OK' to enter directly, or select your own custom username and password.

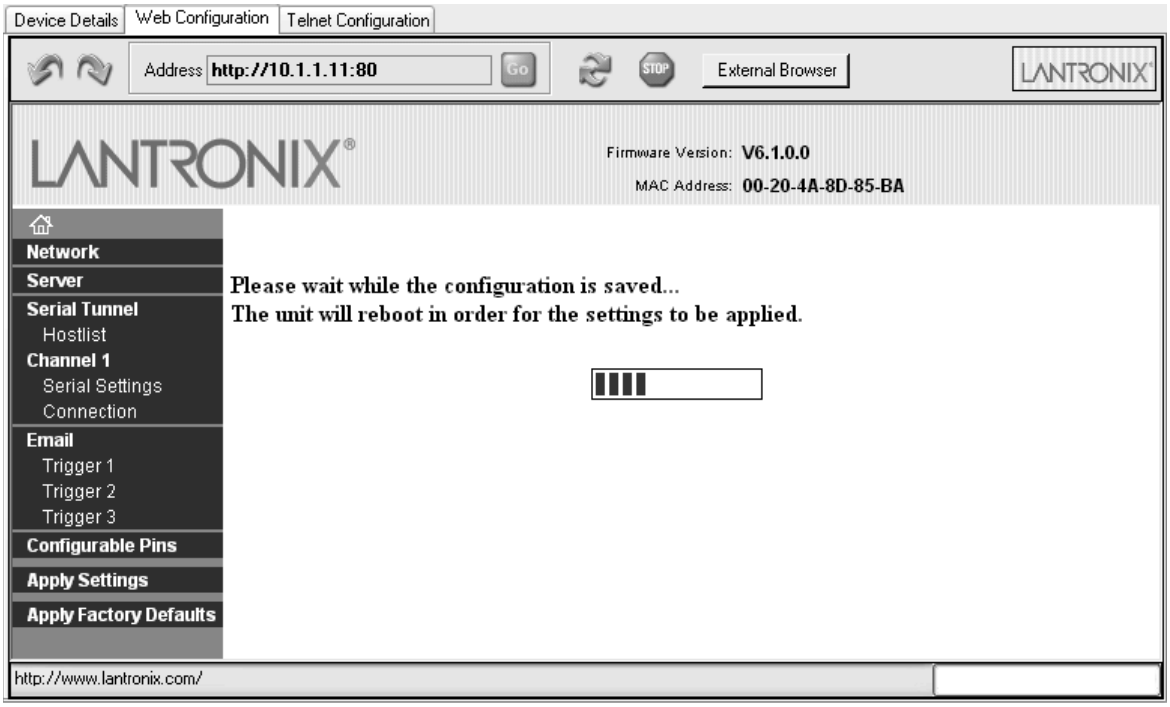
Click on 'Serial Settings' and set up the configuration options as shown below.



After changing the configuration settings to the correct values, scroll down to the bottom of the page and click the 'OK' button. As shown overleaf, the message 'Done!' appears next to the 'OK' button to verify that the changes have been accepted.



Save the new settings to memory by clicking on the 'Apply Settings' button in the left-hand menu. When you do this the ethernet port will reboot and take several seconds to reappear.



For most standard networks the other configuration settings can be left at their default values. *Do not change any other settings unless you are an experienced user of TCP/IP networks.*

If you can connect to the IP address, but can't talk to the ICC-402, (or if you want to start again), simply click on 'Apply Factory Defaults' and repeat the setup for the 'Serial Settings' as shown above.

Advanced users can also use other serial modes in the ICC-402 with the ASCII Ethernet option. For example, the standard ASCII mode (mode 0), the macro master mode (mode 2) and the print mode (mode 3) can also be used. When using these modes of operation, ensure that the serial settings in the Ethernet port match the serial settings in the ICC-402. Depending on the protocol you are using, you may also have to disable or modify the 'Packing Control' section in the 'Serial Settings' window.

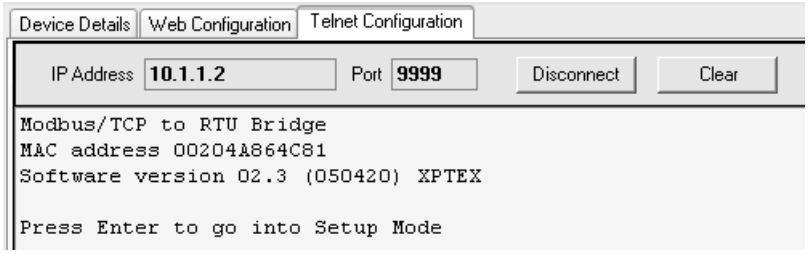
In most cases the ASCII ethernet port will receive incoming connections to allow an external client to read or control the ICC-402, however it is also possible to make outgoing connections

to a remote server. This allows an exchange with an http or SMTP server for email. To do this, the ASCII ethernet port needs be set to modem mode in the 'Connection' window. The ICC-402 does not include any built-in support for these features, and operation in these modes will always require the appropriate macro to be loaded into the ICC-402.

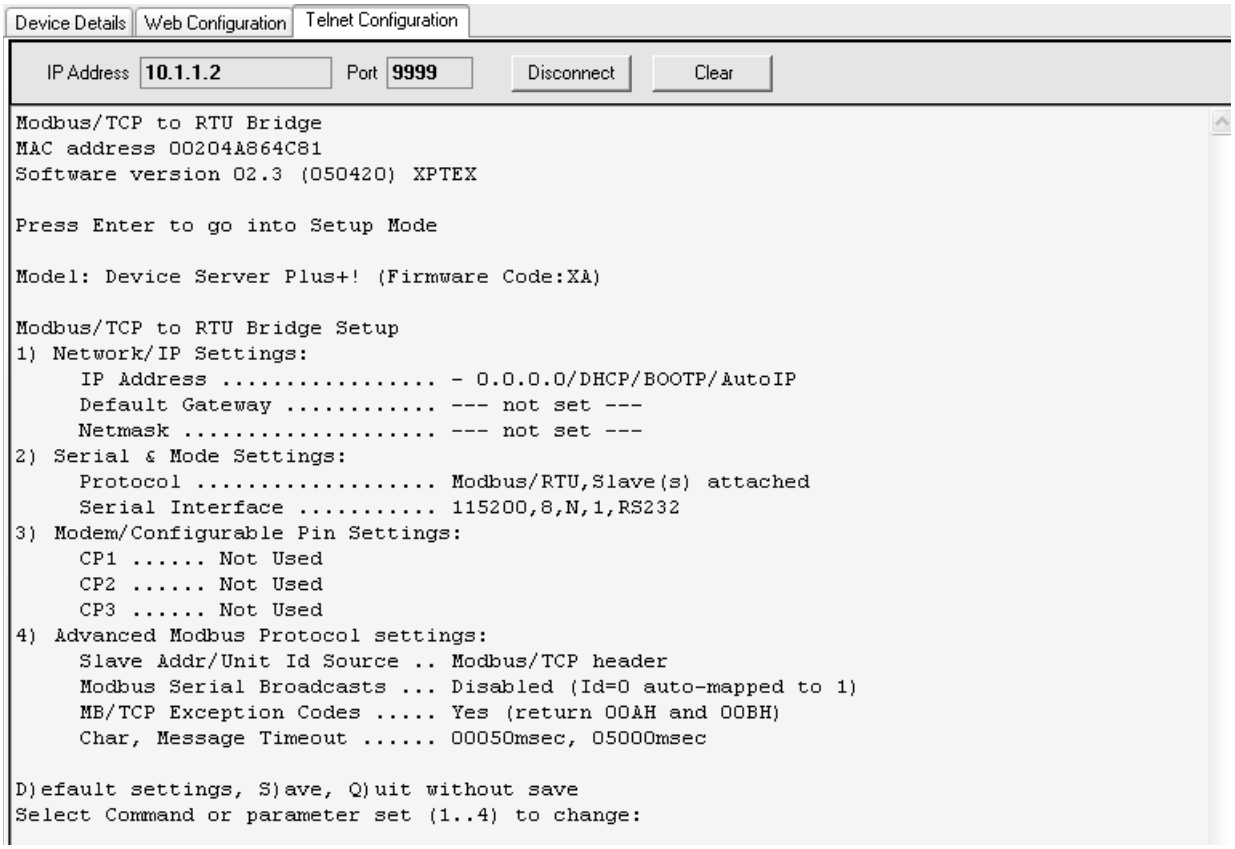
Please contact Texmate NZ to enquire about the range of macros that are currently available. For more help with ASCII Ethernet advanced features, please go to www.lantronix.com/support/documentation.html and download the 'Xport User Guide'.

Modbus/TCP Option

If you are using the Modbus/TCP ethernet option, click on the IP address of the device shown in the left frame of the device installer window. Then select the 'Telnet Configuration' tab at the top of the right frame. (Modbus/TCP versions do not have a web browser for configuration setup). Click on the connect button at the top of the window and you should see the following:



Press the 'Enter' key on your keyboard and the screen should now display all of the available configuration options, as shown below.



A brief summary of the configuration setup is shown in the diagram on p.6. Parameters in any of the above sections can be changed by entering a number from 1-4 and then working through the menu options as they are presented. Press the 'Enter' key to retain the current parameter value (shown in braces), or enter a new value for the parameter and then press enter.

Section 1 allows you to change the IP addresses. The default IP address should be set to 0.0.0.0 which selects the DHCP mode, enabling your network server to allocate an IP address automatically.

Section 2 allows you to set the operating mode and serial settings. The Slave/Master option for the Ethernet port must match the ICC-402's serial mode setting for port 1 (see p.1-3 section on 'ICC-402 Serial Options'). If you are operating the ICC-402 as a Modbus slave, then you should also select Slave (or if the ICC-402 is set to operate as a Modbus master then you should select master) for the Etherenet port as well. The operating mode should always be set Modbus/RTU mode (the ICC-402 only operates in RTU mode). The serial setings should be set to 115,200 baud, 8 data bits, no parity, 1 stop bit.

Please note that these parameters should also match the ICC-402 serial options for port 1 (as described in Section D of the configurtaion utility instructions on p.2). It is possible to use different settings if required, but these settings have been chosen to give maximum through-put and are recommended. The interface type parameter should always be set to RS232.

Section 3 provides options which are not available with the ICC-402, so it can be ignored.

Section 4 provides advanced options for the Modbus protocol. Unless you are an advanced user and have experience with the Modbus protocol, we recommend that you use the default settings for this section. If you do change any parameters in this section, you can always return to the default settings by pressing D at the main menu screen.

Section 5 is only available when Modbus master mode has been selected. This section allows the standard 8-bit Modbus slave addresses to be converted to 32-bit IP addresses for use with the Modbus/TCP network via a lookup table. The following section has been recreated from the Modbus/TCP users guide to explain this in more detail.

Since serial Modbus uses 8-bit slave addresses and a TCP/IP network requires 32-bit IP addresses, the Device Server uses this table to map an 8-bit address into an IP/Unit ID combination. The 8-bit address is used to both select the desired IP and as the Unit ID sent. The table holds 8 entries, and any Modbus slave address not found in the table returns an exception response to the master (if enabled).

Overleaf is an example of adding an entry.
Select 5 to edit/view settings.

```
Close Idle TCP sockets after (3-60 sec, 0=leave open) (10)
Redundant entry retries after (15-60 sec. 0=disable feature) (0)
(Set 4th octet to 0 to use Slave Address as part of IP)

     1):     001-100: 192.168.000.000+SLV
     2):     101-199: 192.168.000.150

A)dd, D)elete, E)xit - select function A
     Modbus addr from (102)
     Modbus addr to (102) 255
     Slave IP address (192) 172.(168) 16.(000) 123.(000)

     1):     001-100: 192.168.000.000+SLV
     2):     101-199: 192.168.000.050
     3):     200-255: 172.016.123.000+SLV

A)dd, D)elete, E)xit - select function
```

These options are only relevant in Modbus master mode and once again we recommend that only advanced Modbus users change these settings from the default values.

TexmateNZ intelligent control

10B Vega Place,
Mairangi Bay,
North Shore City
0632, New Zealand

Ph: +64 (9) 835-1550 Email: info@texmate.co.nz
Fax: +64 (9) 835-1250 Web: www.texmate.co.nz

DOC. REVISION CODE: ICCETH-MAN-09-V.02

Distributor