IPTool Manual

TREND

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ABOUT THIS MANUAL

This manual is designed to help you become familiar with the principles of how to use the program to set up Trend System devices on an Ethernet network, and where necessary fault find.

It is assumed that the engineer has a good understanding of the Trend System, and IQ configuration, as well as building control, and TCP/IP, and Ethernet.

- About IPTool - Describes IPTool functionality.
- Installation - Describes how IPTool is installed.
- Using IPTool - Provides detailed procedures for commonly used IPTool functions.
- Appendices - Details of IPTool functions that may occasionally be used.

Conventions Used in this Manual

There are numerous items and instructions in this manual, the conventions below are designed to make it quick and easy to find and understand the information.

- Menu commands are in **bold** type.
- Buttons, and options in dialogue box that you need to select are in **bold** type.
- The names of text boxes and dialogue boxes are in **bold** type.
- Key combinations that you should press appear in normal type. If joined with a plus sign (+), press and hold the first key while you press the remaining one(s). For example CTRL+P indicates holding down the control key while pressing P.
- Text you should enter is in *Italic* type.

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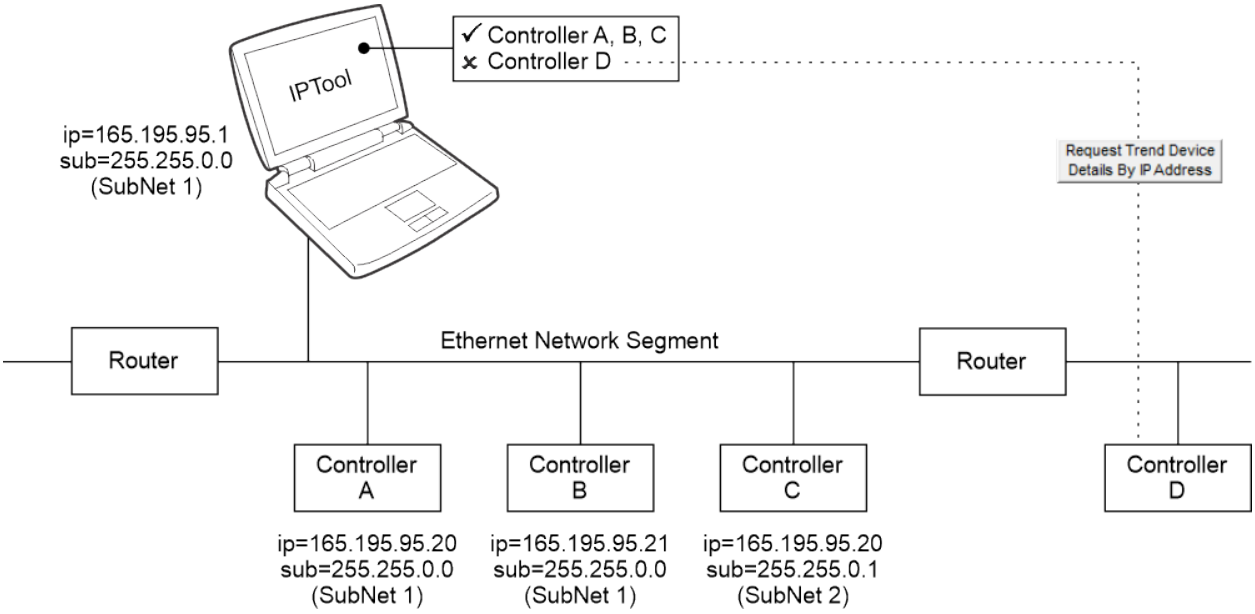
PART 2 - IPTOOL OVERVIEW

This part of the manual provides a general overview of the IPTool, and the basic principles and concepts.

1 ABOUT IPTOOL

IPTool is a software tool for use when initially setting up Trend System Ethernet devices. It enables all of the Trend System Ethernet devices on a particular Ethernet network segment to be discovered, and their network settings to be viewed and configured. It also allows vCNCs to be setup on each device.

In the following example, IPTool is connected to an Ethernet network segment containing three controllers, with controller C on a different SubNet to controllers A and B. IPTool will discover all three controllers and display their settings in the device list of the IPTool Window.

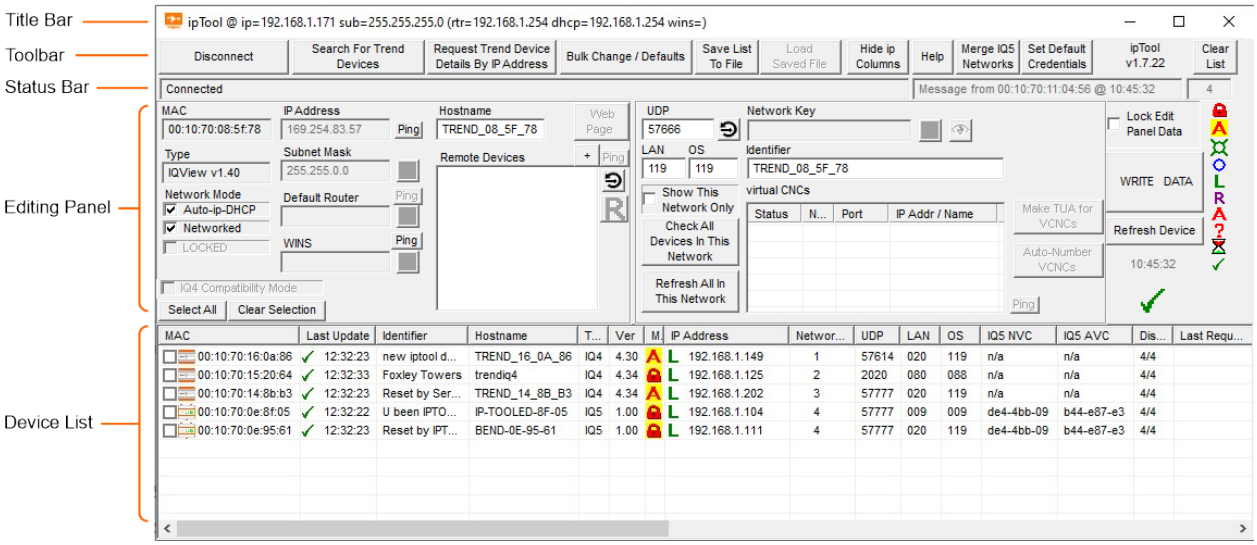


Controller D is on a different network segment and will not be discovered automatically by IPTool. However, as long as its IP address is known, it can be manually added to the device list. Any devices that have been added to the remote devices table in a controller can also be added to the device list.

IPTool is also useful for fault finding Trend networks running over Ethernet, such as looking for duplicate addresses, and checking for settings that are incorrect or not yet configured.

1.1 The IPTool Window

The IP Tool Window comprises the following areas:



Device List

This displays a list of all the Trend System Ethernet devices on the same network segment as the PC running IPTool regardless of their IP settings. Selecting a device in the list displays all of its editable parameters in the Editing Panel. The list contains the following columns:

Column	Description
☐	Device selection checkbox. Can be used to select multiple devices to perform certain operations. Can be used in conjunction with the Select All and Clear Selection buttons in the editing panel.
MAC	The device's MAC address. The column also displays icons that indicate the device type: IQ5 series controller in IQ5 Mode IQ5 series controller in Compatibility Mode IQ4 series controller IQ3 series controller 3xtend/3inc/L EINC indicates that the device is one imported from a file created in IQSET. indicates that the device is one imported from a file created by IPTool.
Last Update	The time of the last message received from the device. The following icons are also used: indicates that the device data is up-to-date. indicates that IPTool is waiting for updated information from the device.
Identifier	The device's identifier as specified in its address module.
Hostname	The device's hostname.
Type	The type of device (e.g. IQ5, IQ4, IQ3, 3xtend/3inc/L, EINC).
Ver	The version of firmware in the device.

Column	Description
Mode	Indicates whether any configuration has been carried out on the device. The following icons may also appear in this column: The device is locked. For IQ3 and IQ4 controllers IPTool is unable to make any changes. For IQ5 controllers changes can be made but you will be prompted to enter the credentials of a valid Administrator or Engineer System account. The device is in factory mode, and should be returned to the factory. The device is set to use automatic addressing and, therefore, its address settings may change.
IP Address	The device's IP address. The column also displays one of the following icons: Device is on the same subnet as the PC running IPTool. Device is on a different subnet and accessed via a router. Device is on a different subnet and not accessible. Therefore a connection to the device's vCNC(s) from this PC would currently not function. Device is using automatic addressing with no DHCP server. If a ☐ is around any of the above icons this indicates that the IP address is duplicated with another Trend System device. No indication is given if the IP address is duplicated with a non-Trend System device.
Network#	An arbitrary number that identifies each unique Trend network found. All devices on the same network will have the same network number. For IQ4 and earlier networks each network is defined by the UDP port. For IQ5 networks each device must have the same UDP and same Network Key. See Merging Separated IQ5 Networks.
UDP	The UDP port used by the device to group Trend System devices on a virtual internetwork. The following icons may also appear in this column: The device is using the same UDP port as the currently selected device. The device in standalone mode, which means that it will not communicate with any other devices even if it is set up with the same UDP port.
LAN	The device's LAN number.
OS	The device's network address.
IQ5 NVC	Network verification code (IQ5 devices only).
IQ5 AVC	Account verification code (IQ5 devices only).
Discovery Stage	During device refresh this indicates progress e.g. 1/8, 2/8 through to 8/8 meaning refresh is complete. The second digit varies according to the device type.
Last Request	The last text comms command sent to the device by IPTool.
Refresh Status	Shows REFRESH_COMPLETED once all device data is up-to-date. REFRESH_IN_PROGRESS shows when IPTool is waiting for the device to respond and DELAY_REFRESH_REQUESTED means IPTool is waiting for the device to reboot before requesting further updates.
Retry Countdown	In the event of a failed update request this counts down from 100 to 1 before attempting another refresh.
Total num retries	In the event of failed refresh requests this number will increase by one for each failure. It this number is large or keeps increasing it could indicate a communications problem with the device.
Remote devices	The IP addresses or host names of any Trend System devices on other network segments that the device can communicate with.

Column	Description
Remote device subnets	The subnet masks of any Trend System devices on other network segments that the device can communicate with. Each subnet aligns with the IP Address shown in Remote devices.
Subnet Mask	The device’s subnet mask.
Default Router	The IP address of the device’s default router.
WINS	The IP address of the WINS server.
DNS	The IP address of the DNS server.
#vCNC	The number of virtual CNCs supported by the device.
vCNC data	The network settings of the virtual CNCs that have been set up in the device.
C(I)	The IP Address of the currently connected vCNC.
Eth Status	Indicates the current status of the device's Ethernet network.
ILoop Status	Indicates the status of the current loop network to which the device is connected.
HTTP webport	The web port number of the device for HTTP communications. Default is 80.
Ethernet module number	The reference of the Network strategy module handling Ethernet communications.
#vCNC configured	The number of virtual CNCs that have been set up in the device.
Next Refresh at	In the event of a device reboot this value counts down from 100 to 1 before attempting to refresh the device data.

NOTE: *Not all parameters are supported by all devices. IPTool will prevent adjustment of parameters not supported by a particular device. Not all displayed parameters can be edited using IPTool.*

Editing Panel
This contains the various settings that relate to the device currently selected in the Device List. The following settings are displayed:

Setting	Description
Default Router	The IP address of the router that is to be used by the device as the default router.
MAC	The device's MAC address (read only).
Network Mode	Auto-ip-DHCP ☐ Device will use the specified IP settings (ip address, subnet mask, default router, wins server). ☑ Device will obtain its IP settings from a DHCP server. If no server is found the device will default to link/local mode.
	Networked ☐ Device is in standalone mode and will not form a network with other Trend devices. ☑ Device will form a network with other Trend devices.
	LOCKED (read only) ☐ Device settings can be edited using IPTool. ☑ Device is locked and cannot be edited using IPTool.
IQ4 Compatibility Mode (IQ5s only)	☐ Controller will operate in IQ5 mode. ☑ Controller will operate in compatibility mode
Type	The device type (IQ5, IQ4, etc) and firmware version (read only).
Hostname	The device's hostname.
Identifier	The device's identifier.
UDP	The UDP port used by the device to communicate with other Trend System devices as a virtual internetwork.
IP Address	The device's IP address.
LAN	The device's Lan number.
Lock Edit Panel Data	Indicates whether the information in the list has been locked to prevent it being refreshed while it is being edited.
OS	The device's network address.
Remote Devices	Contains the IP addresses and subnet mask of the devices in the Remote Trend Devices Table.
Subnet Mask	The device's subnet mask.
virtual CNCs	The network settings of the virtual CNCs that have been set up in the device.
WINS	The WIN server IP address to be used by the device.
Network Key	An alphanumeric value required by IQ5 controllers only. Each IQ5 that needs to belong to the same network must share the same network key (and UDP port). Any combination of letter and numbers may be used. The shield icon indicates the security strength of the key. See Specific Setup for IQ5 Controllers for more details.
Show This Network Only	☐ show all available devices in the Device List. ☑ show only those devices that have the same network number (Network#) as the currently selected device.

The Editing Panel also includes the follow buttons:

Button	Description
Check All Devices In This Network	Performs a check on all devices that are on the same network number (Network#) as the selected device, to ensure that they are all set up correctly. See Check Network Settings for further details.
Refresh All In This Network	Refreshes the displayed settings for all devices that are on the same network number (Network#).
Make TUA for VCNCs	Creates a TUA (Trend Universal Address) for use with connecting tools or supervisors to a vCNC. See Create a TUA for a Virtual CNC for further details.
Auto-Number VCNCs	Allows vCNCs to be automatically created and numbered. See Auto number Virtual CNCs for further details.
WRITE DATA	Saves all the settings in the Editing Panel to the currently selected device.
Refresh Device	Requests an update from the currently selected device and refreshes the settings in the Editing Panel. Any unsaved changes will be lost.
Select All	Selects all currently visible devices in the device list.
Clear Selection	Deselects all currently visible devices in the device list.
	Applies a saved default value to the corresponding parameter.

Status Bar
This provides information on whether IPTool is connected, the last message received and the time it was received.

Toolbar
This contains a number of buttons that provide easy access to some of IPTool's functions. The table below lists the buttons that are available.

Button	Description
CONNECT/Disconnect	Changes between **CONNECT**, and **Disconnect** depending on the connection status. **CONNECT** connects to the network, **Disconnect** disconnects from the network.
Search For Trend Devices	Refreshes the list in the Device List.
Request Trend Device Details By IP Address	Enables a specific Trend System device to be viewed even if it is on a different subnet to the PC running IPTool providing you know its IP address.
Bulk Change/ Defaults	Enables the default settings to be set up and applied.
Save List To File	Saves information about the set up of controllers such as their Lan numbers, IP address to a .mac file that can then be used by SET to update the information it stores about the controllers, or for restoring settings after faults or failures.
Load Saved File	Enables information about the set up of controllers such as their Lan numbers, IP address etc has been set up in by SET to be loaded from a .mac file created by SET. This information can then be used by IPTool to quickly set up the controllers, or to restore setting after faults and failures.
Hide ip Columns	Select this option to hide columns in the Device List that contain IP information, making the list easier to view.
Help	Opens the online help application for IPTool.
Merge IQ5 Networks	Opens the Network Merging dialogue box, used to combine separate IQ5 networks.
Set Default Credentials	Opens the Controller authentication dialogue box, used to save a default user name and password for an IQ5 system account.
(IPTool version)	The version of IPTool (e.g. vv1.7.22).
Clear List	Clears the Device List.

Title Bar

When IPTool is connected to the network, details of the PC's IP address and subnet mask are shown here. DHCP, RTR and WINS server addresses are also displayed.

2 GENERAL DATA PROTECTION REGULATION (GDPR)

The General Data Protection Regulation (EU) 2016/679 (GDPR) is a regulation in EU law on data protection and privacy for all individual citizens of the European Union (EU) and the European Economic Area (EEA). It also addresses the transfer of personal data outside the EU and EEA areas. The GDPR contains provisions and requirements related to the processing of personal data of individuals (data subjects) inside the EEA, and applies to any enterprise established in the EEA or (regardless of its location and the data subjects' citizenship) that is processing the personal information of data subjects inside the EEA.

Under the terms of the GDPR personal data includes any information that may be used to identify an individual. This includes (but is not limited to):

- user names,
- passwords,
- phone numbers,
- email addresses,
- work or residential addresses.

Any such information entered into IPTool is encrypted and stored on the PC where the IPTool application is installed on a customer's premises. Neither Honeywell or Trend have any involvement with the storage and/or processing of personal data within IPTool.

Responsibility for compliance with the requirements of the GDPR lies fully with the system integrator or system administrator and, as such, they must ensure that adequate technical and organisational systems are in place to:

- obtain explicit consent from each data subject for personal data to be stored, used and/or processed,
- allow individuals to have access to their personal data in order to verify accuracy,
- allow individuals to withdraw their consent at any time and to have their personal data to be permanently erased,
- maintain the security and integrity of data storage and access at all times,
- report any breaches of data security (that may affect user privacy) to the relevant authority within 72 hours of the breach occurring.

3 SECURING IPTOOL

This section should describe steps that should be taken to ensure the product is secure. an example is shown below update as appropriate.

IPTool is a networked product and as such must have its security correctly configured to reduce the risk of unauthorised access. For general information about securing Trend products see the General Security Best Practice for Trend Products Information Sheet (TP201331).

Adopting normal installation and security best practice guidelines can mitigate the risk of a malicious IT attack from a skilled and equipped IT individual.

3.1 Security Checklist

- ☐ IPTool installation files included in disaster recovery plan
- ☐ PC running latest version of supported operating system with all updates
- ☐ PC running virus protection software
- ☐ Latest version of IPTool being used
- ☐ All system networks secured
- ☐ Appropriate user accounts set up on PC

In addition to the actions described in the General Security Best Practice for Trend Products Information Sheet (TP201331), the advice described in the following sections must be followed.

3.2 Developing a Security Program

Refer to the General Security Best Practice for Trend Products Information Sheet (TP201331).

3.3 Disaster Recovery Planning

When developing the disaster recovery plan ensure that it includes ALL data required to restore system operation.

3.4 Physical and Environmental Consideration

The PC running IPTool should, where possible, be secured against unauthorised physical access in accordance with your company's IT policy.

3.5 Security Updates and Service Packs

Ensure the PC running IPTool has the latest operating system updates installed, and the latest version of IPTool is being used.

Trend software is tested against the latest service packs and updates applicable at the time of release. For significant operating system/service packs, please check the Trend Partner's web site (https://partners.trendcontrols.com) for compatibility issues.

3.6 Virus Protection

Ensure the PC running IPTool is running virus protection software, and the virus definitions are kept up-to-date.

3.7 Network Planning and Security

Ethernet Network

If IPTool is to be connected to an Ethernet network, follow the guidelines in the General Security Best Practice for Trend Products Information Sheet (TP201331).

It is recommended that the Ethernet network used by the BMS system is separated from the normal office network using an air gap, or virtual private network. Physical access to the Ethernet network infrastructure must be restricted. You must also ensure that the installation complies with your company’s IT policy.

The use of a Firewall and Intrusion Detection System (IDS) from a reputable provider of security products is recommended. Follow best practice for the products chosen as well as any corporate IT policy where the installation is made.

3.8 Virtual Environments

Follow best practice for the products chosen as well as any corporate IT policy where the installation is made.

3.9 Securing Wireless Devices

If a wireless network is being used it must be secured in accordance with your company’s IT policy.

3.10 System Monitoring

Trend Controls recommends the use of an Intrusion Detection System (IDS) from a reputable provider of security products. Follow best practice for the products chosen as well as any corporate IT policy where the installation is made.

3.11 Windows Domains

Not applicable to IPTool.

3.12 Securing Access to the Operating System

Ensure the PC running the IPTool is secured in accordance with your company's IT policy. In addition, you should follow Microsoft's advice for securing your chosen operation system.

PART 3 - INSTALLATION

This part of the manual provides describes how to install IPTool.

1 INSTALLATION

IPTool is supplied and installed as part of IQSET.

Once installed it can be accessed from the IQSET Tools menu. Users may also find it helpful to create a shortcut to the IPTool app so that it can be run separately without having to run IQSET. By default, IPTool is located here:

"C:\Program Files (x86)\Trend Control Systems\System Engineering Tool\Support\ipTool.exe"

PART 4 - USING IPTOOL

This part of the manual provides a description of how to use IPTool.

1 USING IPTOOL

This section contains typical procedures required when using IPTool. Depending on the system configuration and your preferred commissioning process, it may not be necessary to follow all these procedures. However, in most cases you will need to follow:

1.1 Run IPTool and Connect to the Trend Network

The PC running IPTool must be connected to the same Ethernet network segment as the Trend System devices that you want to view or configure.

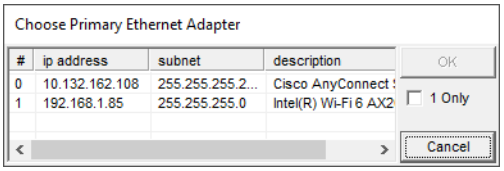
> ***NOTE:*** *You may need to change the IP settings of the PC to match those of the Ethernet network.*

To run IPTool and connect to the Trend network:

1. Run IQSET.
2. On the **Tools** menu click **Trendip-Tool**. The IPTool Window will be displayed.
3. Click **CONNECT**.

   If the PC has single network adapter IPTool will now broadcast a special message over the local network segment and the device list will display responses from each device found.

   If the PC has multiple network adapters (including VPNs), the **Choose Primary Ethernet Adapter** dialogue is displayed:



   In which case click the required network and click **OK**.

4. Once the device list has been updated, select a device from the list. It's current settings are displayed in the editing panel.
5. Make any required changes to the settings in the editing panel.
6. To save any changes to the currently selected device click **WRITE DATA**.

> *NOTE:*
> - *If the device is locked (🔒) IPTool is unable to make any changes to IQ3 and IQ4 controllers. For IQ5 controllers changes can be made but you will be prompted to enter the credentials of a valid Administrator or Engineer System account when **WRITE DATA** is selected.*
> - *It is not possible to edit the following parameters when an IQ5 has system accounts set up:*
>   - *Auto-ip DHCP*
>   - *Default Router*
>   - *Hostename*
>   - *IP Address*
>   - *IQ4 compatibility Mode*
>   - *Network*
>   - *Subnet Mask*
>   - *UDP*
>   - *WINS*
> - *If communicating with IQ5 controller the PC must also be on the same subnet in order to be able to write values.*

1.2 Managing the Information Displayed in IPTool

1.2.1 Hide IP Information

IP information about each of the devices in the Device List can be hidden, enabling other information to be seen more easily. When applied, the columns for **ip address**, **subnet mask**, **default router**, **wins server** and **rem Trend devices** are not displayed.

To hide IP information:

1. Click **Hide ip Cols**. The IP related columns are hidden.

> ***NOTE:*** *The **Hide ip Cols** button changes to **SHOW ip Cols**. To view the IP information again click **SHOW ip Cols**.*

1.2.2 Clear the List of Devices

If required the list of devices in the **Device List** can be cleared to ensure that when a refresh (Search for Trend Devices) is performed the information is up-to-date.

To clear the list of devices:

1. Click **Clear list**.

1.2.3 Refresh the List of Trend Devices

If required the list of devices in the Device List can be refreshed to ensure that the latest details are displayed.

To refresh all devices in the list:

1. Click **Search For Trend Devices**.

To refresh only those devices using the same UDP port:

1. In the **Devices List**, click a device that uses the required UDP port.
2. Click **Refresh All In This Group**.

1.2.4 View Devices Using the Same UDP Port Number

All devices that are to be on the same Lan or internetwork must use the same UDP port. It is possible to restrict the devices in the **Device List** to devices that are using the same UDP port.

To view devices using the same UDP port number:

1. In the **Devices List**, click a device using the required UDP port number.
2. Select the **Show this Group Only** check box.

1.2.5 Rearranging Columns

Data in the Device List is arranged in various columns. The width of each column can be adjusted and the order of columns changed to suit individual requirements.

> ***NOTE:*** *Column widths and order are not retained when IPTool is restarted.*

To adjust column width:

1. Position the mouse cursor over the right-hand edge of the column heading.
2. Drag the column edge to the required position.

To move column position:

1. Position the mouse cursor over the column heading to be moved.
2. Drag the column to the required position.

1.3 Configuring Device Settings

To configure device settings:

1. Run IPTool and Connect to the Trend Network.
2. In the device list, click the device that is to be configured. Its settings will be displayed in the editing panel.

   TIP: You should be able to identify a particular device by its unique MAC address - this appears in the **MAC** column, and is also printed on a label on the device.

3. Check the **Network Mode - LOCKED** status:

   ☐ The device can be edited with IPTool. Go to step 4.
   ☑ The device has been configured with one or more user modules (i.e. it is password protected) and cannot be edited using IPTool. Any changes will need to be made using IQSET.

4. If you want to ensure that the data in the **Editing Panel** is not refreshed while you are making changes select the **Lock Edit Panel Data** check box.
5. If you are setting up an IQ5 controller you will need to set up Compatibility mode - see Specific Setup for IQ5 Controllers.
6. Set the **Network Mode - Networked** status as required:

   ☑ The device will build a Trend LAN or internetwork with other Trend devices.
   ☐ The device will operate in standalone mode (i.e. it won't build a LAN /internetwork with other devices).

   NOTE: *Not all Trend System Ethernet devices support this mode of operation. Check the product's documentation for more details.*

7. Set the **Network Mode - Auto-ip-DHCP** status as required:

   ☐ The device will use the IP settings defined in IP Tool. After selecting this option go to step 7.
   ☑ The device will get it's IP address, subnet mask, default router, WINS server and DNS server addresses from a DHCP server. After selecting this option go to step 11.

   NOTE: *Not all Trend System Ethernet products support using a DHCP server, in which case this check box will be disabled. If there is no DHCP server the device will go into 'link local mode' where it will automatically negotiate its IP address with other devices on the subnet. Also note that the manual configuration of a DNS server is not possible using IPTool. If this is required it must by done using IQSET (via strategy or the IQTool Monitor) or via text comms.*

   If configuring an EINC, use of a DHCP server is not supported; the check box is replaced with an **Auto-ip-switch** check box. Selecting the **Auto-ip-switch** check box sets the EINC's IP address to 128.1.1. <address switch setting> (e.g. if the address is 80 the IP address would be 128.1.1.80).

8. In the **IP Address** box enter the device's IP address. It is important that the IP address for each device on the network is unique. IP addresses in the following ranges should not be used:

IP Address	Reason
127.x.x.x.x	Reserved for loopback.
Non masked part of IP address	The non masked part of the IP address cannot be all 1's or 0's e.g. if IP address is 1.2.x.x and subnet mask is 255.255.0.0 then x.x. cannot be either 255.255 or 0.0.
224.0.0.0 to 239.255.255.255	Reserved for multicast.
240.0.0.0 to 247.255.255.255	Reserved for experimentation and development.
x.x.x.255	Reserved for broadcast.

   If the Ethernet network to which the device is connected has a DHCP server and the device is not obtaining its settings form the DHCP server it is important to ensure that the IP address of the device is outside the range of IP addresses assigned by the server. If this is not the case, the DHCP server may assign the same IP address to another device.

9. In the **Subnet Mask** box enter the required subnet mask. The subnet mask must ensure that all devices for the same internetwork, which are not separated by routers, are on the same subnet. Therefore all devices that are not separated by routers should have the same subnet mask.
10. In the **Default Router** box enter the IP address of the default router. It should be set to the IP address of a router on the same subnet. To check the default router is reachable click **Ping** next to the **default router** box.
11. If a WINS server is being used in the **WINS** box enter the IP address of the WINS server. To check the WINS server is reachable click **Ping** next to the **Default Router** box.
12. In the **UDP** box enter the UDP port number that the device is to use to communicate with other Trend System devices on the Ethernet network. All Trend System devices used to create an internetwork must use the same port. The default for all Trend System devices is 57612.
13. In the **LAN** box enter the device's LAN number. This can be in the range 1 to 119 excluding addresses 2, 3, and 10.
14. In the **OS** box enter the device's network address. This can be in the range 1 to 119 excluding addresses 2, 3, and 10.

    NOTE: *Not all devices require the LAN number and OS address to be specified.*

15. If host names are to be used to address the device enter the required name in the **Hostname** box.

    NOTE: *The hostname must be unique on the network, must not be greater than 15-characters in length and can only contain 7-bit ASCII characters in the range A-Z, a-z or 0-9 plus '-' or '_'. It must start with a character in the range A-Z or a-z and must not end with '-' or '_'.*

16. In the **Identifier** box enter the device's identifier.

    NOTE: *To avoid confusion it is usually recommended that the identifier is set to be the same as the hostname.*

17. If you are setting up an IQ5 controller you will need to set up the Network Key - see Specific Setup for IQ5 Controllers.
18. If the device is to form part of an internetwork that spans routers it is necessary to set up the Remote Trend Devices Table. IQ3s, IQ4s and IQ5s in Compatibility mode only.
19. If a PC is to connect to the Trend network via one of the device's virtual CNCs, or the device is to send alarms to a supervisor over Ethernet set up one or more virtual CNCs. To check the host device for the virtual CNC is reachable from the PC running IPTool click **Ping** next to the IP address of the host device.
20. Click **WRITE DATA**.

1.4 Specific Setup for IQ5 Controllers

Compatibility Mode

IQ5 controllers can be made to operate in Compatibility Mode to allow them to communicate with IQ4, IQ3, IQ2, IQ1 and IQECO controllers, as well as 963 supervisor and IQVIEW8 display. In this mode the IQ5 does not support IQ5 specific security features and cannot communicate with IQ5 controllers in IQ5 mode.

To set Compatibility Mode:

1. Set the **IQ4 Compatibility Mode** checkbox as required:

   ☑ The IQ5 will operate in Compatibility Mode.
   ☐ The IQ5 will operate in IQ5 Mode.

> ***NOTE:*** *Once the strategy has been downloaded the Security module's Compatibility mode parameter is set to read only making it necessary to perform a factory reset before the controller can be switched from compatibility mode to IQ5 mode or from IQ5 mode to compatibility mode.*

Network Key

For IQ5 controllers that are operating in IQ5 mode to form a network with each other they must be assigned a common Network Key (in addition to having the same udp port number). For full details of IQ5 networking principles please refer to the IQ5 Configuration Manual (TE201485).

To set the IQ5 Network Key:

1. Enter a suitable alphanumeric value in the **Network Key** box.

   It is recommended that the Network Key contains:

   - a minimum of 10 characters
   - at least one uppercase and one lowercase character
   - at least one numeral
   - at least one of these special characters - _ !

   Spaces are not permitted.

   The shield icon indicates the security strength of the key:

   weak or does not meet minimum criteria medium strong

> **TIP:** Use the  button to show the Network Key. The Network Key can be saved as a default setting to allow it to be quickly applied to other IQ5 controllers.

1.5 Set Default Credentials for IQ5

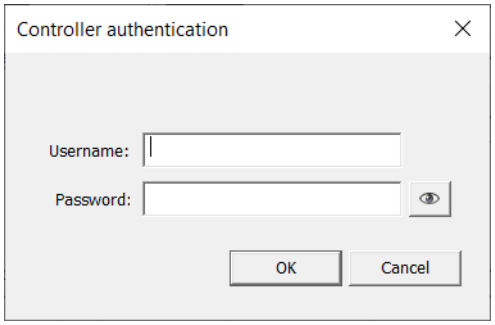
When using IPTool for updating IQ5 controllers in IQ5 Mode that already have one or more system accounts set up, you will be prompted to enter an appropriate username and password in order to make changes. To avoid having to enter these each time a write is performed, IPTool allows default credentials to be set which will be used to validate each write operation.

NOTE:
It is not possible to edit the following parameters when an IQ5 has system accounts set up:

- *Auto-ip DHCP*
- *Default Router*
- *Hostename*
- *IP Address*
- *IQ4 compatibility Mode*
- *Network*
- *Subnet Mask*
- *UDP*
- *WINS*

To set the default credentials:

1. Click **Set Default Credentials**. The **Controller authentication** dialogue box will appear:



2. Enter a **Username** and **Password** for a suitable engineering or admin system account.
3. Click **OK**.

1.6 Configuring Remote Devices

Remote devices (i.e. devices that are on a different network segment to the PC running IPTool) can be added to the device list in the following ways:

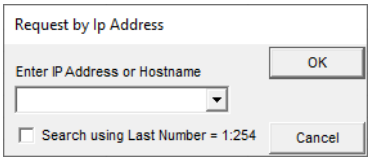
- by specifying the IP Address (or hostname) of a device,
- by using the Remote Trend Devices table of a device.

In both cases the remote device(s) will be added to the device list with an R icon next to the IP address. Once added, the settings of the remote device can be viewed and edited as required.

> ***NOTE:*** *IQ3s, IQ4s and IQ5s in Compatibility mode only.*

To view a device by its IP Address of hostname:

1. Run IPTool and Connect to the Trend Network.
2. Click **Request Trend Device Details By IP Address**. The **Request by Ip Address** dialogue box is displayed:



3. In the **Enter IP Address or Hostname** box enter the IP address or host name of the device that is to be viewed.
4. Click **OK**. The device will be added to the device list.

To view devices using a remote devices table:

1. Run IPTool and Connect to the Trend Network.
2. In the device list, select a device that has the required devices in its Remote Devices table. See Set up the Remote Trend Devices Table.
3. Click R next to the table. All the remote devices listed will be added to the device list.

1.7 Set up the Remote Trend Devices Table

NOTE: This section only applies to IQ3s, IQ4s and IQ5s in Compatibility mode.

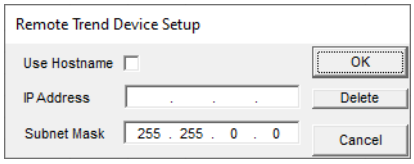
If a device is to form part of an internetwork that spans routers it is necessary to set up the Remote Trend Devices Table so that the device knows about the other devices on the internetwork that are not on the same network segment.

NOTE: In EINC devices the Remote Trend Devices Table is known as the Remote EINC Table.

It is recommended that the remote Trend devices table be placed in all Trend System devices on the Ethernet network and that it includes the details of at least two devices from each subnet to be linked by the internetwork. For increased reliability details of additional devices should be specified. If automatic addressing is being used the devices must be specified using host names, and if manual addressing is being used the list should contain the devices with the lowest IP addresses.

To set up the Remote Trend Devices Table:

1. Run IPTool and Connect to the Trend Network.
2. In the **Device List**, click the device for which the table is to be setup.
3. Click + **next to Remote Devices**. The **Remote Trend Device Setup** dialogue box is displayed:

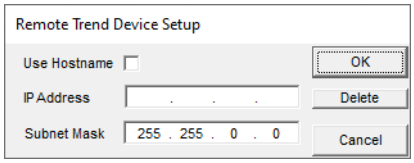


4. If the remote device is to be specified by its hostname select the **Use Hostname** check box.
5. In the **IP Address** box enter the IP address or hostname of the remote device.
6. In the **Subnet Mask** box enter the subnet mask of the remote device.
7. Click **OK**.
8. Repeat steps 3 to 7 for each device that is to be included in the table.
9. Click **WRITE DATA**.

NOTE: The table can be copied to other devices - see Specify the Default Settings.

To edit an address in the table:

1. In the **Remote Devices** table double-click the address to change. The **Remote Trend Device Setup** dialogue box is displayed:



2. Edit the settings as required.
3. Click **OK**.

To delete an address from the table:

1. In the **Remote Devices** table double-click the address to delete. The **Remote Trend Device Setup** dialogue box is displayed.
2. Click **Delete**.
3. Click **OK**.

1.8 Set up Virtual CNCs

A virtual CNC (or vCNC) can be configured to operate in one of two modes - supervisor mode and alarm mode.

The **supervisor mode** of a virtual CNC enables the connection between a PC running supervisory or tool software and the IQ network to be made over Ethernet to the virtual CNC, rather than the normal RS232 connection to a standard CNC. The supervisor/tool connects to the virtual CNC by using the device's IP address or host name and the port as set up in the virtual CNC module making connection to the virtual CNC. This enables the supervisor/tool to communicate with devices on the IQ network, and for those devices to communicate with it.

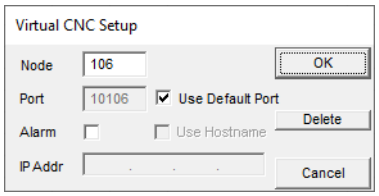
The **alarm mode** of a virtual CNC enables alarms generated from IQ controllers or other devices to be transmitted to a PC running a suitable supervisor (963) connected to the Ethernet network where the connection to the virtual CNC is of a temporary nature. An IQ controller can send its alarms to the virtual CNC using normal Trend System Lan/device addressing, and the virtual CNC will forward the alarms to the PC using the port and the alarm IP address, specified in the virtual CNC. The supervisor listens for alarms on the specified port, and retrieves the site identities, Lan numbers, and device addresses of any alarms it receives so that it can process them further. To set up a virtual CNC in alarm mode its IQ network address must be specified, along with its port address, and the IP address to which it is to send alarms.

> ***NOTE:*** *Alarm mode is not supported by IQ3, IQ4 or IQ5 controllers. IP alarms should be sent using these controller's ability to send IP alarms directly to a supervisor.*

To set up a virtual CNC:

1. Run IPTool and Connect to the Trend Network.
2. In the **Device List**, click the device for which the vCNC is to be set up.
3. In the **virtual CNCs** list either:
   - Double-click an existing vCNC that is to be set up, or
   - Double-click a blank line to create a new vCNC.

   The **Virtual CNC Setup** dialogue box is displayed:



4. In the **Node** box enter the network address of the vCNC. It can be set to any valid address (1 to 119 excluding addresses 2, 3, and 10). 0 will disable the vCNC.
5. Specify the TCP port used by the vCNC:
   - To force the default port number to be used select the **Use Default Port** check box this will cause the port number to be set to 10000 plus the Trend network address e.g. if the network address is set to 4 the TCP port would be 10004.
   - To specify a port manually clear the **Use Default Port** check box and in the **Port** box enter the required port number.

   > ***NOTE:*** *The port number will need to be provided to a tool or supervisor to allow it to connect to the vCNC. See Create a TUA for a Virtual CNC.*

6. For a supervisor vCNC no further setup is required - go to step 9. For an alarm vCNC continue with step 7.
7. Select the **Alarm** check box.
8. Enter the IP address (of the device to which the vCNC is to send its alarms is to) in the **IP Addr** box. Alternatively, select the **Use Hostname** check box and enter the hostname.
9. Click **OK**.
10. Click **WRITE DATA**. To check the host device for the virtual CNC is reachable from the PC running IPTool click **Ping** next to the IP address of the host device.

1.8.1 Auto number Virtual CNCs

The virtual CNCs for a device can be auto numbered, and if necessary added automatically. The network addresses are set to 101 to 108 depending on the number of vCNCs available in the product. The TCP port number is set to 10000 plus the network address i.e. 10101, 10102, 10103, etc.

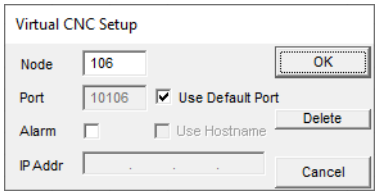
To auto number virtual CNCs:

1. Run IPTool and Connect to the Trend Network.
2. In the **Device List**, click the device for which the virtual CNCs are to be renumbered.
3. Click **Auto-Number vCNCs**. Virtual CNCs will be added to make up the maximum number for the device, and any existing virtual CNCs will be renumbered according to the rules described above.
4. Click **WRITE DATA**.

1.8.2 Delete a Virtual CNC

To delete a virtual CNC:

1. Run IPTool and Connect to the Trend Network.
2. In the **Device List**, click the device for which the virtual CNC is to be deleted.
3. In the **virtual CNCs** list double click the vCNC that is to be deleted. The **Virtual CNC Setup** dialogue box is displayed:



4. Click **Delete**.
5. Click **OK**.
6. Click **WRITE DATA**.

1.9 Using Default Settings

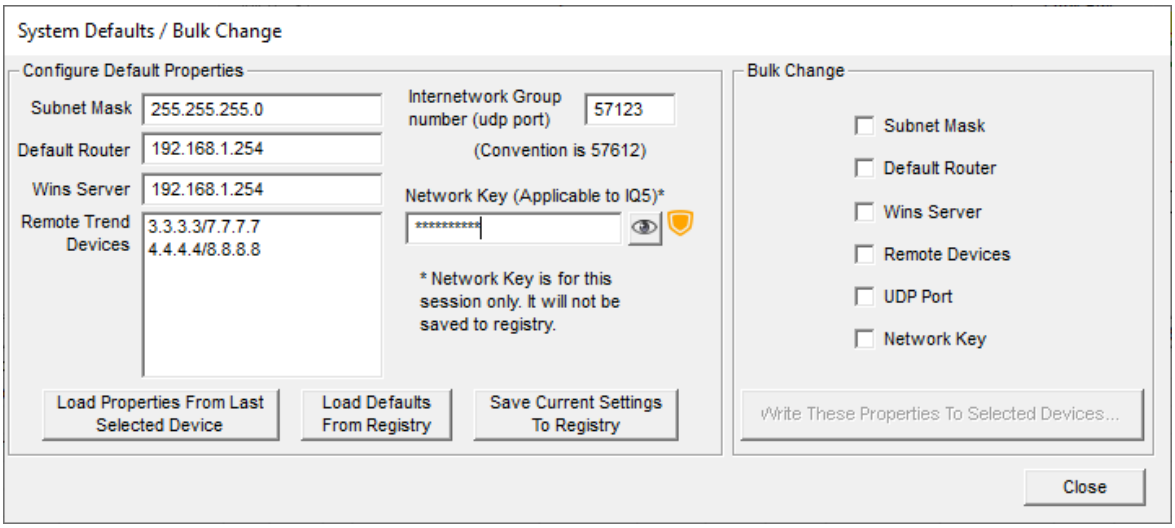
Default values can be defined and applied to selected devices as required.

1.9.1 Specify the Default Settings

Default values can be defined for the subnet mask, default router, WINS server, remote Trend devices, UDP port number. A network key can also set for use with IQ5 controllers.

To specify the default settings:

1. Run IPTool and Connect to the Trend Network.
2. Click **Bulk Changes / Defaults**. The **System Defaults / Bulk Changes** dialogue box is displayed:



3. Set up the default values as required, using any of the following methods:
   - Click **Load Properties From Last Selected Device** to copy the settings from the currently selected device (in the device list) to the dialogue box.

     NOTE: *The Network Key (for IQ5 devices) is not copied.*

   - Click **Load Defaults From Registry** to return the settings in the dialogue to the previously saved values.
   - Type values directly into the required fields.

     NOTE: *Addresses in the Remote Trend Devices list cannot be added or changed here. You will need to edit the values for a device first and then use 'Load Properties From Last Selected Device'.*

4. Click **Save Current Settings To Registry** to save the displayed values.

   NOTE: *The Network Key is not saved to the registry and will only be retained for the duration of the current IPTool session.*

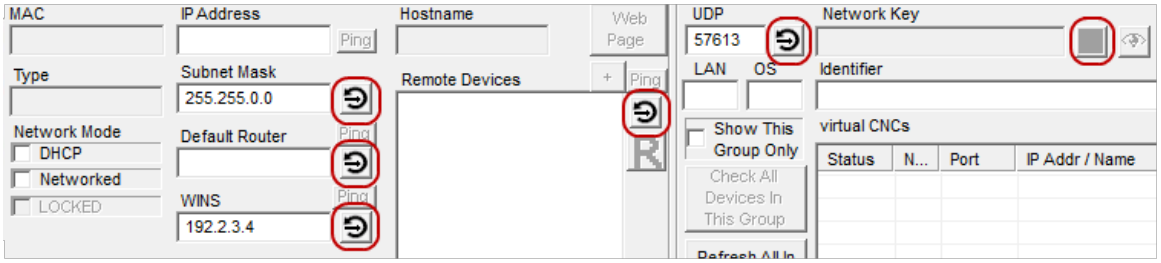
5. Click **Close** to close the dialogue box.

1.9.2 Apply the Default Settings

Any previously defined default values can either be applied to a single selected device using buttons in the editing panel, or applied to multiple selected devices using the System Defaults / Bulk Changes dialogue box.

To apply default settings to a single device:

1. Run IPTool and Connect to the Trend Network.
2. In the **Device List**, click the device that is to be edited.
3. In the **Editing Panel** click the button next to any parameters that are to be set to the default values.



> ***NOTE:*** *If the button is greyed out then a default value cannot be applied for the corresponding parameter.*

4. Click **WRITE DATA**.

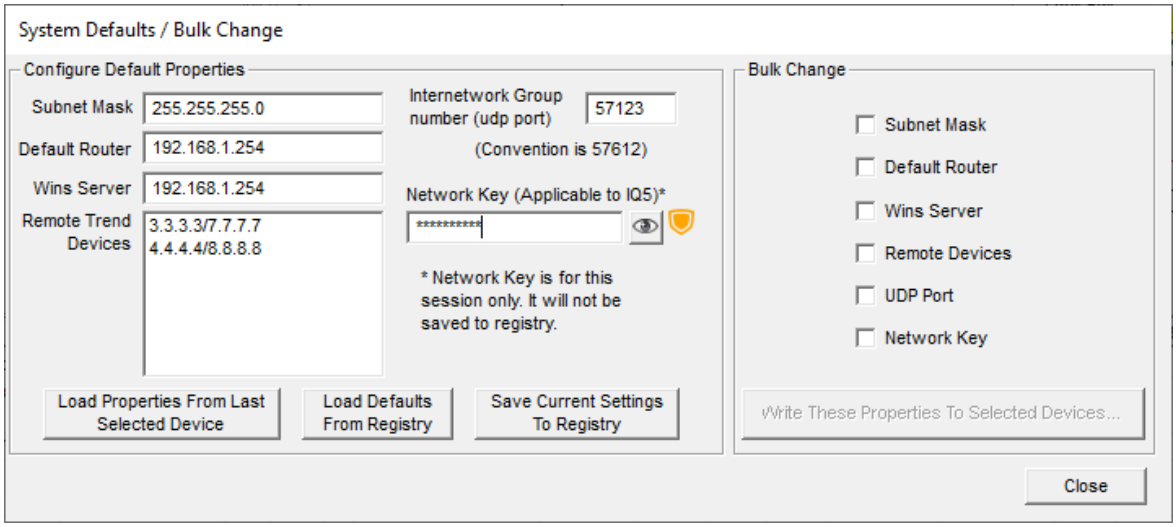
> ***NOTE:*** *Changes to certain values will result devices to reboot.*

To apply default settings to multiple devices:

1. In the device list select the check boxes on the left-hand side to select the required devices.

> **TIP:** Use the **Select All** button.

2. Click **Bulk Changes / Defaults** to open the **System Defaults / Bulk Changes** dialogue box:



3. In the **Bulk Change** area, check each of the default values that you want to send to the selected device(s).
4. Click **Write These Properties To Selected Devices...**to apply the chosen values to the currently selected device(s).

> ***NOTE:*** *Changes to certain parameters will cause the updated devices to reboot.*

1.10 Disconnect IPTool from the Network

Once you have finished using IPTool for security you should always disconnect it from the network.

To disconnect from the network:

1. Click **Disconnect**.

APPENDICES

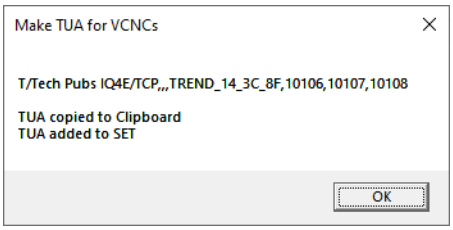
This section contains processes and information that may be required on an occasional basis or for special applications.

A.1 CREATE A TUA FOR A VIRTUAL CNC

A TUA (Trend Universal Address) is a text string that enables tools (e.g. IQSET) or supervisors (e.g. IQVISION) to be quickly configured to connect to a virtual CNC.

To create a TUA for a virtual CNC:

1. Run IPTool and Connect to the Trend Network
2. In the **Device List**, click the device containing the virtual CNC for which a TUA is to be created.
3. In the **virtual CNCs** list click the required virtual CNC.
4. Click **Make TUA for VCNCs**. A dialogue showing details of the TUA is displayed



The TUA is added to the list of TUAs available to SET, and copied onto the clipboard. The name of the TUA will be the identifier of the device containing the virtual CNC.

> ***NOTE:*** *If the device has DHCP enabled then the hostname is included in the TUA instead of the IP address.*

A.2 MERGING SEPARATED IQ5 NETWORKS

NOTE: *This section only applies to IQ5s in IQ5 Mode.*

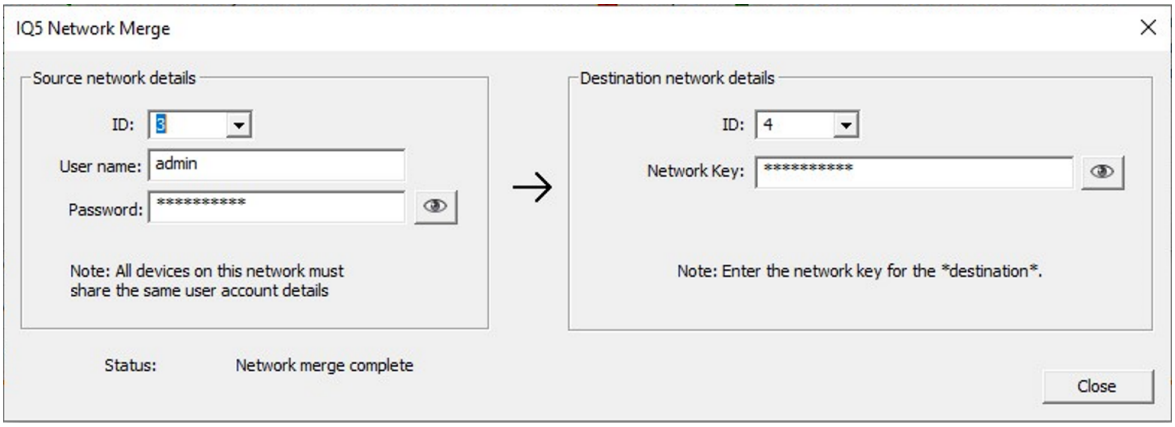
In certain cases two or more IQ5 networks can co-exist on the same physical network even though all the devices have the same network key and udp port number. Under normal circumstances all new IQ5 controllers will synchronise their System Accounts with whichever controller had a System Account set up first. If, during commissioning, more than one IQ5 is set up with a System Account(s), it is possible for two (or more) IQ5 networks to form, each with a different set of System Accounts.

In order to resolve this the networks must be merged together using IPTool. This process requires you to select two networks - the source and the destination. During the merge process all devices in the source network will have their System Account(s) deleted and be joined to the destination network. Once joined to the destination network these devices will be updated with the System Account(s) from the destination network.

NOTE: *Any existing strategy in the source devices will not be affected by the merge process.*

To merge separated IQ5 networks:

1. Run IPTool and Connect to the Trend Network.
2. In the device list look at the ID numbers listed in the **network** column and take note of which ID number is used for the device(s) on the source network and the destination network.
3. Click the **Merge IQ5 Networks** button. The **IQ5 Network Merge** dialogue box is displayed:



4. In the **Source network details** area select the network **ID** for the source network.
5. Enter the **User name** and **Password** of a System Account for the source network.
6. In the **Destination network details** area select the network **ID** for the destination network.
7. Enter the **Network Key** for the destination network.

> **IMPORTANT:** Ensure that the Network Key specified is the one for the destination network **NOT** the source network. entering the wrong Network Key will cause the system accounts in the source network to be deleted.

8. Click **Merge** to start the merge process. The **Status** message will show 'Network merge complete' if the merge was successful.
9. Click **Close**. The dialogue box will close and the device list will now refresh.
10. Look at the ID numbers listed in the **network** column and check that all expected devices have the same network ID.

A.3 CHANGE IQ5 MODE

When changing between IQ5 Mode and Compatibility mode you should remember that an appropriate strategy will need to be downloaded to the controller. Strategy that works in one mode won't work in the other.

To change between modes before a strategy has been downloaded

1. Use IPTool to set the Security module's compatibility Mode parameter as required.
2. Configure the controller - see IQ5-IO Controller & I/O Modules Installation Instructions - Configuring (TG201483).

> ***NOTE:*** *Ensure that the strategy is configured appropriately.*

To change between modes after a strategy has been downloaded

1. Perform a factory reset - see IQ5-IO Controller & I/O Modules Installation Instructions - Configuring (TG201483).
2. Use IPTool to set the Security module's compatibility Mode parameter as required.
3. Configure the controller - see IQ5-IO Controller & I/O Modules Installation Instructions - Configuring (TG201483).

A.4 VIEW A CONTROLLER'S WEB PAGES

Devices that have a web interface enabled can be accessed from IPTool. Where available these web pages provide information about the module parameters in the device and enable alarms and graphs to be viewed. They may also allow adjustments to be made, as well as provide access to the IQ controller GraphIQs pages if these have been setup.

To view a controller's WEB page:

1. Run IPTool and Connect to the Trend Network.
2. In the **Device List**, click the controller in the list to highlight it.

   > ***NOTE:*** *If the*  *icon is displayed is displayed next to the device's IP address in the IP address column, it will not be possible to view the web pages as the controller and the PC device are on different subnets.*

3. Click **Web Page**. The device's web interface home page will be displayed.

For further details on navigating around and using the web pages refer to the web user guide for the appropriate device.

A.5 SYSTEM CHECKS

IPTool provides the following options to check the correct set up of devices.

Check Group Settings
Check a Device is Reachable

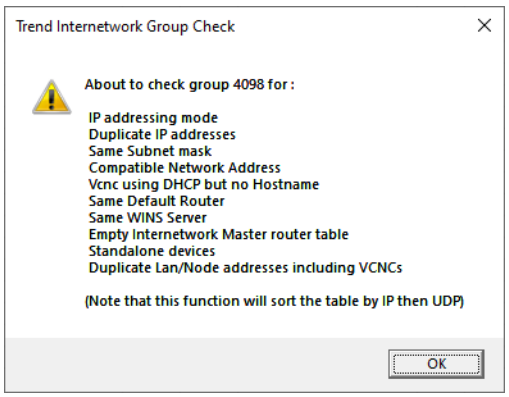
A.5.1 Check Network Settings

IPTool enables all the devices that are on the same network number (Network#) to be checked to ensure that they are all set up correctly. The table below lists what is checked, and the possible solution if there is a problem:

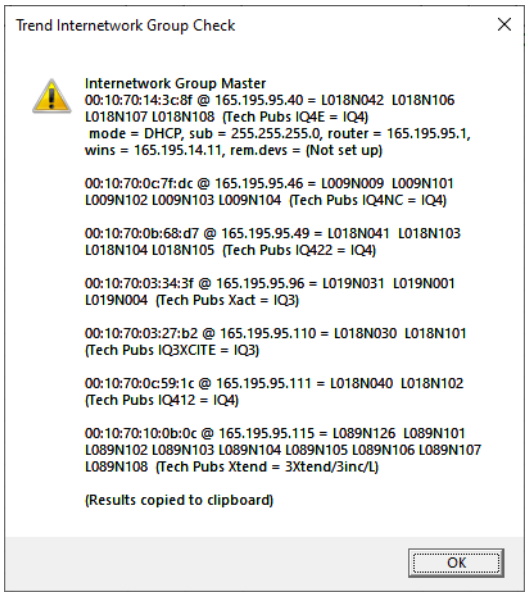
Check	Description	Solution
Duplicate IP addresses	Checks to see if any of the devices have the same IP address as any other device on the Ethernet network.	Change one of the IP duplicated addresses address so that all addresses are unique.
Same Subnet Mask	Checks to that all of the devices in the group have the same subnet mask.	Change the subnet masks that are wrong.
Compatible Network Address	Checks that the IP settings all of the devices in the group enable them to communicate with each other.	Check the incompatible device's IP address and subnet mask.
Same Default Router	Check that all of the devices in the group have the same default router.	If necessary change the IP address of the device's default router.
Empty internetwork master router table	Checks whether the device with the lowest IP address has its Remote Devices Table set up. This device will be indicated by a  in the **remote Trend devices** column. ***NOTE:*** *In a DHCP system the Remote Devices Table must be set up in all devices. IP Tool does not check for this.*	See Set up the Remote Trend Devices Table.
Standalone Devices	Checks that none of the devices in the group are set to operate in standalone mode.	Set affected device(s) to be Networked. See Configure Device Address Settings.
Duplicate Lan/Node Address	Checks that none of the devices (including any vCNCs) in the group have duplicate Lan and node numbers.	Change the Lan number or node number so that each device has a unique address on the Trend network. See Configure Device Address Settings.

To check the network settings:

1. Run IPTool and Connect to the Trend Network.
2. In the **Device List** click any device in the group that is to be checked.
3. Click **Check All Devices In This Network**. The **Trend Internetwork Group Check** dialogue box is displayed:



4. Click **OK**. The check will now be performed. When the check is complete a dialogue box will show the results. For example:



A.5.2 Check a Device is Reachable

It is possible to check that a device is reachable from the PC running IPTool using its current IP settings. This is done by pinging the device's IP address.

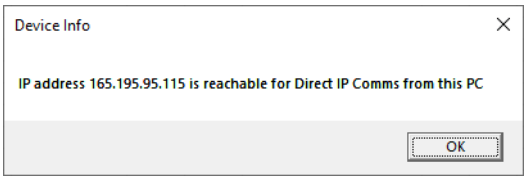
> ***NOTE:*** *Before checking that a device is reachable ensure that any data changed by IPTool has been written to the device.*

To check a device is reachable:

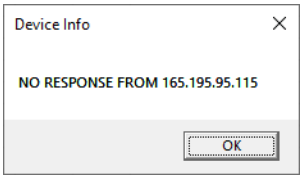
1. Run IPTool and Connect to the Trend Network.
2. In the **Device List**, click the required device.
3. Perform any or all of the following as required:
   - To check the device is reachable click **Ping** next to the **ip address** box.
   - To check the device's default router is reachable click **Ping** next to the **default router** box.
   - To check the device's WINS server is reachable click **Ping** next to the **wins server** box.
   - To check the devices in the remote Trend Devices table are reachable click **Ping** next to the **remote Trend devices** box.

   A dialogue box is displayed indicating the result. For example:

   If a device is reachable a dialogue box similar to the one shown below is displayed.



   If a device is not reachable a dialogue box similar to the one shown below is displayed.



   This could be because the device is switched off, or the IP network is not set up for the PC running IPTool to communicate with the host.

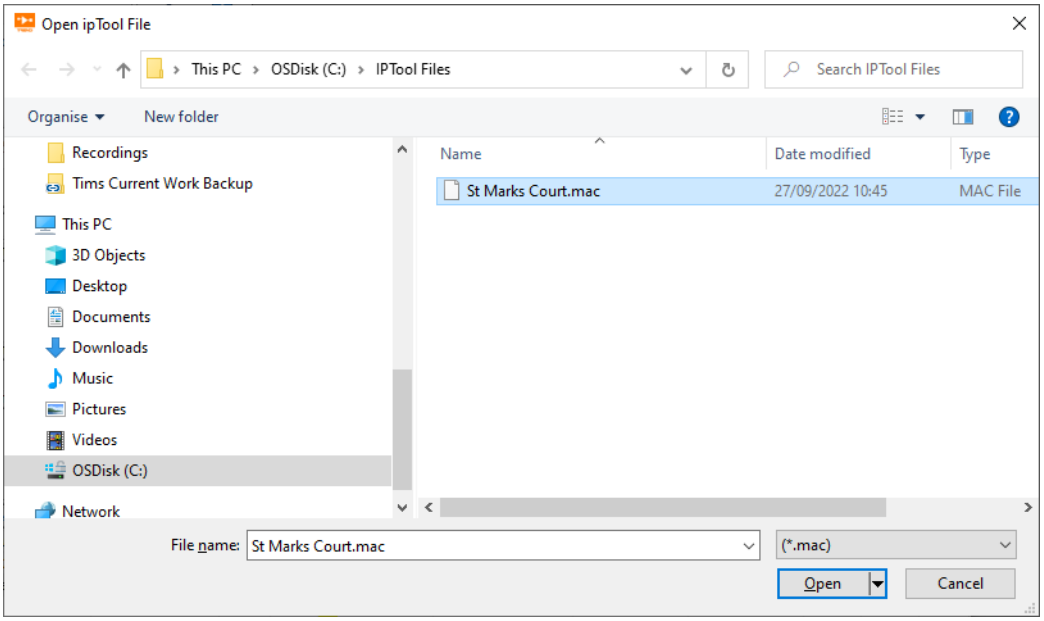
A.6 USING DATA (.MAC) FILES

A.6.1 Load Data

If information about the set up of controllers such as their Lan numbers, IP address etc has been set up in by SET the information can be loaded from a .mac file created by SET. This information can then be used by IPTool to quickly set up the controllers, or to restore setting after faults and failures.

To load data:

1. Run IPTool and Connect to the Trend Network.
2. Click **Open File**. The **Open IPTool File** dialogue box is displayed:



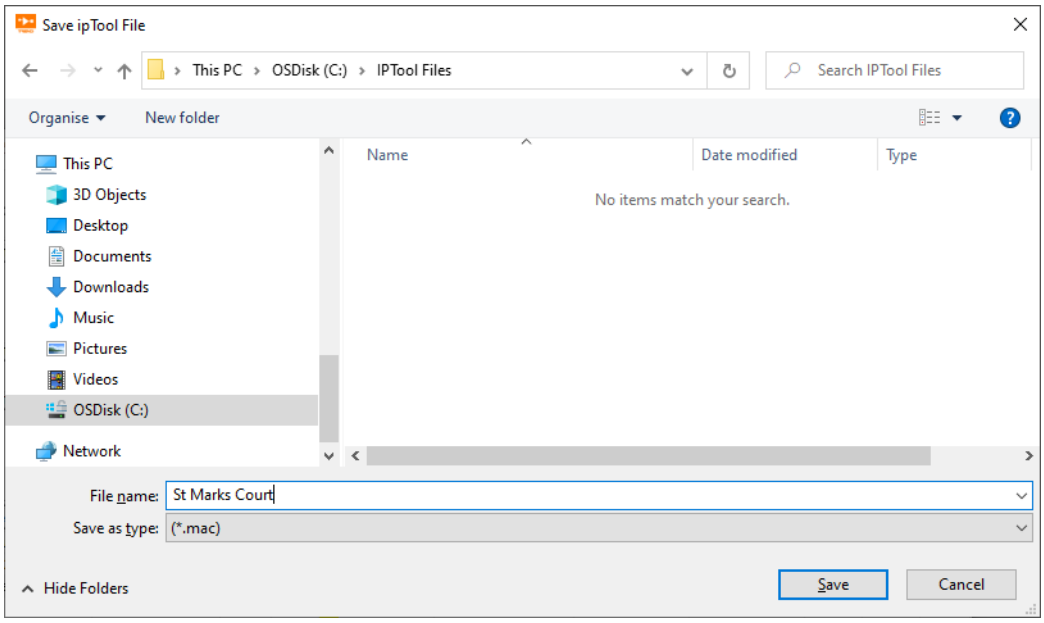
3. In the **folder list** click the required file. To select a file stored in a different location, click the drive, or folder in the **Look in** box that contains the file, and double click the folders in the **folder list** until the file is displayed.
4. Click **Open**. A dialogue box is displayed to indicate the progress. The devices specified in the file will be added to the **Devices List** at the top with an I in the **Mac Address** column to indicate that they have been imported.
5. The imported devices must now be assigned to an actual device by clicking each imported device in turn, dragging it onto the actual device its settings are to be applied to, and releasing the mouse button. This assigns the imported devices parameters to the actual device, and the imported data is removed from the list.

A.6.2 Save Data

Information about the set up of controllers such as their Lan numbers, IP address can be saved as a .mac file which can then be used by SET to update the information it stores about the controllers, or for restoring settings after faults or failures.

To save data:

1. Run IPTool and Connect to the Trend Network.
2. Set up the devices as required.
3. Click **Save File**. The **Save ipTool File** dialogue box is displayed.



4. In the **File name** box enter the required file name. To store the file in a different location, click the drive, or folder in the **Look in** box that contains the file, and double click the folders in the **folder list** until the file is displayed.
5. Click **Save**.

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