Gazelle People Counter
PCST Software User Guide

Table of contents

1 Introduction

1.1 About

With the launch of the new Gazelle product line from Irisys comes a much improved setup tool software version. For those familiar with previous versions of the setup tool software, you should see a marked improvement in the flow of the software as it is now much more streamlined with less mouse clicks involved in each step of the configuration process. Those who are completely new to Irisys detection products should be able to pick up the software very quickly with little or no previous knowledge required due to the various help sections which are now built in.

1.2 How to use this Guide

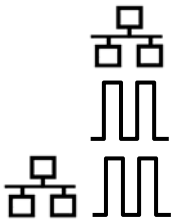
Counters should be installed as per Irisys recommended practices before using this guide. This guide assists with the use of the Irisys People Counter Setup Tool (PCST) software used to configure counters already positioned correctly on the ceiling, which are then connected together and powered. It does not provide fault finding procedures in the event of problems but any error messages given by the software are explained in the relevant section. All installers should attend or go through the Irisys official training presentation before attempting to install counters and configure them.

There are a number of different Irisys people counter models and variants (see section 1.5), but essentially all units can be grouped into; units that are IP enabled, and units which are relay (pulse) output enabled. When using this guide some sections only relate to a particular variant and some will apply to both IP and relay units. The sections are marked as below to indicate which variants it applies to:

This Section of the guide applies to IP Enabled Units.....

This Section of the guide applies to Relay Output Units.....

This Section of the guide applies to both IP and Relay Units...



Additionally, a number of boxouts will be shown at appropriate points:

This type of boxout denotes very important information or instructions that must be followed.

This type of boxout denotes relevant information which may be of interest in certain applications.

This type of boxout denotes a useful piece of information (hints) that may not have been immediately obvious but which could be helpful in the future.

1.3 Ongoing PCST Development

Irisys's commitment to continual improvement through formulated short development cycles are designed to drive functionality and improvements in conjunction with a shorter lead time of all its software products, whilst being completely customer lead.

This method of development means that priorities can be re-evaluated quickly - at the start of each update cycle - and allows a more requested feature, or function, to be prioritised within a very short space of time.

If you would like us to prioritise on any particular features or you would like an ability to be introduced then please send an email to the Irisys support department at: counting.support@irisys.co.uk. Also if you experience problems or have found a software bug then please tell us about it so that it can be fixed in the next update.

1.4 Counter Configuration

Before use, all Irisys People Counter units must first be configured to work in their installed location/environment. The People Counter Setup Tool software (PCST) is used to do this and is available as either an executable version that must be installed on the configuration PC, or as a web based application that runs on a web server hosted on IP versions of the counter.

The configuration PC is connected to the counter via either an IP or serial connection, dependant on the model of counter to be configured. IP enabled models support both serial and IP connection, but relay enabled models support setup via serial only.

For configuration using a serial connection, the installed version of PCST must be used, but for configuration over IP the installed version of the setup tool, or web based PCST can be used in conjunction with a compatible Internet browser running the Microsoft Silverlight Add-on.

Counter Type	Setup Connection	Setup Software Method
IP Enabled Counter	IP	Web browser
		Installed version
	Serial	Installed version
Relay Only Enabled Counter	Serial only	Installed version only

All configuration options are loaded into a non-volatile storage area within the unit and are maintained, even after power down.

1.5 Installed 'Exe' versus 'Web' Setup Tool Comparison

IP enabled counters can be configured using their on-board, web accessed, PCST version, or via the installed 'exe' version. In contrast, relay only counters must be configured using the installed 'exe' version of PCST.
IP enabled counters can furthermore utilise an IP connection or a serial lead connection for configuration purposes, but a relay only unit must be configured using a serial connection.
For the configuration of IP units via IP it is therefore possible to use an internet browser and not need to install any additional software on your machine. This will be the preferred option if a laptop has been locked down as part of a company's security policy, and installing of additional software has been disabled.

Configuration of the IP enabled counters can be done using the built in internet browser accessed web version of the people counter setup tool software.

For the configuration of relay units, the requirement to install the PCST software still remains.

In order to configure relay output only counters, you must install the exe version of the PCST software.

In some cases it may be necessary to configure IP units via serial connection and again the requirement to install the PCST software also exists. This method of configuration may be preferred in order to configure the counting functionality if there is no local IP connection available which allows the installer to also view the counting area at the same time.

It should be noted that configuration of an IP unit via the exe version of the software will not allow all settings to be configured. Some of the IP details such as DNS Settings, as well as the Client connection settings, are not accessible through the exe software. Therefore, in some cases it may be necessary to configure the main counting functionality and basic IP settings, locally, via serial, and the other IP settings and Client settings via internet browser at the switch or other accessible network point.

Configuring via internet browser is the recommended method of configuring an IP enabled counter.

1.6 Counter Compatibility

The latest PCST software is compatible with all counter models in the Gazelle series and older 3000 series units, although new functionality introduced in the Gazelle series units will not be available in the older 3000 series units. Non-supported options will be greyed out when not available.

It is recommended that the latest Gazelle and 3000 series compatible PCST version is used from now on as this means that both, older units already installed, and any new units, can all be configured using the one software version.

2 People Counter Setup Tool (PCST) Software

2.1 Software Installation

Depending on the type of counter and method of connection to it, you may not need to install any software at all. Remember that the IP enabled counter variants accommodate a web accessed version of the PCST software on board, and therefore by choosing to connect to an IP counter via a web browser, a separate installation of PCST is not required; see section 2.6.1 for more details. Nevertheless, the exe version of PCST will allow an IP connection to an IP counter if required, as well as a serial connection to the IP device which may be necessitated in some situations.
Installation of the exe version of PCST software is a one or two step process dependant on the operating system and whether certain pre-requisites are already installed.
Compatible Operating Systems:

- Windows 7
- Windows 2008 Server
- Windows 8

> In line with Microsoft withdrawing its support for Windows XP, Irisys no longer supports Windows XP also.

Installation consists of simply:

- Running the PCST software Installation Routine

The following sections deal with each step.

2.2 Minimum Hardware Specs

The specs for the PC/laptop that PCST is to be installed on are very modest. Any computer which runs the operating system comfortably will also run the setup tool software as well. If you've noticed slow down or pauses whilst navigating through Windows then it is to be expected that any software running on that operating system will also suffer the same symptoms.
The absolute minimum hardware specs are:

	Processor		Memory
Windows PC	X86 or x64	1.6GHz	2Gb

2.3 Pre-requisites

The PCST software executable uses the very latest software advances introduced by Microsoft in the .NET framework version 4.0. The presence of .NET v4.0 will be checked as part of the installation, and if not already installed will be installed automatically. Note that on some systems a reboot of the computer may be required once .NET 4.0 is installed, and the installation will need to be run again once the computer has fully started.
It is strongly recommended that you utilise the Windows Update function to ensure that all the required patches and Windows bug fixes are installed correctly prior to installing the .NET 4.0 upgrade, see section 2.4.

2.3.1 Pre-requisites for Internet Browser Setup Tool

When using an internet browser to configure an IP enabled counter, the setup software is actually served through web pages directly from the counter via IP, so the additional PCST 'exe' installation is not required.
The only pre-requisite is that you have the Silverlight version 5 browser add-on installed on your machine. A link is provided when trying to access the Silverlight components of the setup tool, but this will require a connection to the internet in order to download and install it. It is therefore advisable to install the add-on before attending site where a direct connection to the internet may not be available.
The Silverlight installation files can also be downloaded directly from the below link:
http://www.microsoft.com/silverlight
Once installed the setup pages can be accessed and displayed in most common Internet browsers, see next section for list of compatible browsers. A serial version of the setup software is available if required, see below.

2.3.2 Compatible Internet Browsers for IP Configuration

Any internet browser which works with the Silverlight version 5 add-on can be used to configure the Irisys range of IP enabled counters. Browsers are adding support for Silverlight all the time, but at the time of writing, the known compatible browsers are listed below.
Silverlight Compatible Computers:

Compatible Operating Systems* & Browsers	Requirements	Internet Explorer				Firefox 3.6+	Safari 4+	Google Chrome 12+
		10	9	8	7			
Windows 8	X86 or x64, 1.6GHz, 2Gb	Y	-	-	-	Y	-	Y
Windows 7	X86 or x64, 1.6GHz, 2Gb	-	Y	Y	-	Y	-	Y
Windows Vista	X86 or x64, 1.6GHz, 2Gb	-	Y	Y	Y	Y	-	Y
Windows Server 2008	X86 or x64, 1.6GHz, 2Gb	-	Y	Y	-	Y	-	Y
Windows Server 2008 R2	X86 or x64, 1.6GHz, 2Gb	-	Y	Y	-	-	-	Y
Mac OS 10.5.7+	Intel Core Duo 1.83Ghz, 1Gb	-	-	-	-	Y	Y	-

If a browser does not support Silverlight, or Silverlight is not installed, you can still use your browser to configure the settings which do not need Silverlight such as the IP and Client Connection settings.

Remember that configuration via internet browser is not available for relay-only devices without an IP connection.

2.4 Windows Update

It is recommended that the built in ‘Windows Update’ functionality is utilised before installing the PCST software. This function will automatically connect to the Microsoft website and download all patches and bug fixes not already present on the computer. In this way the computer is kept up to date and protected against newly discovered bugs and exploits.

To run a ‘Windows Update’, simply select the option from the main ‘Start’ menu:

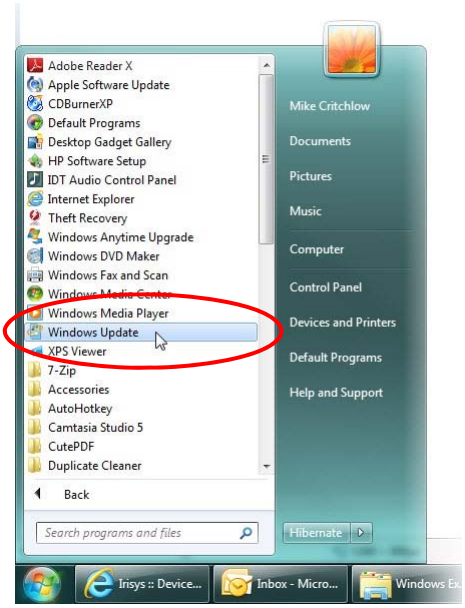


Figure 2.4.1

The computer will then connect to the Microsoft Update server and display a list of recommended and optional updates for you to choose from. All ‘Recommended’ updates should ideally be installed.

Once the updates are installed a reboot of the computer maybe required. Once updates are installed it is recommended that a ‘Windows Update’ is attempted again to see if any other updates are now available based on the updates just installed. If a computer has not been updated for a while, or has never been updated, this may be required a number of times in order for the computer to be fully up to date.

> Periodically performing a Windows Update is generally always recommended in order to keep your computer running securely and fault free.

2.5 Software Installation

Once .NET, and any other updates have been installed, you can then proceed with the main setup software installation. Just double click the installer to begin the process. When you first run the installer, you must acknowledge and agree to the Software License Agreement:

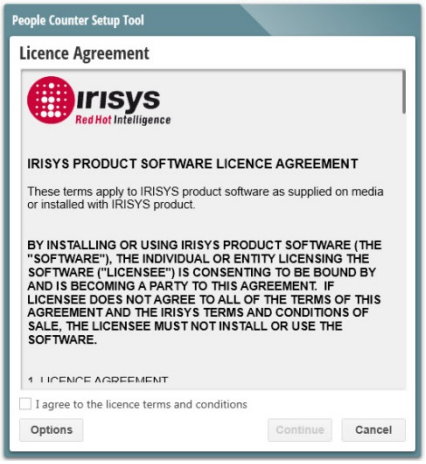


Figure 2.5.1

On systems implementing User Account Control (UAC), you will now need to allow the installer to proceed:

Figure 2.5.2

At this point you can click on the ‘Options’ button in order to change the install location, or you can simply tick the ‘I agree’ checkbox and click ‘Continue’:

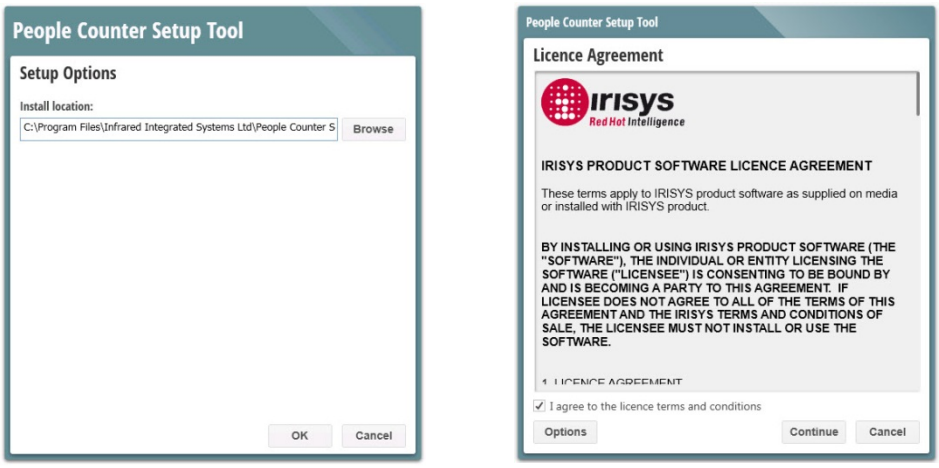


Figure 2.5.3

The software will then install, this may take a minute or so:

Figure 2.5.4

If .NET 4.0 is not already present on the computer, this too will be installed as part of the PCST installation. A reboot of the computer may also be required in some cases.

Once installed successfully, you can ‘Close’ the installation program:

Figure 2.5.5

The setup software is now ready to use.

2.6 Connecting to the Counter

There are a number of different connection options available, each can be used to communicate with counters for configuration purposes. The following sections detail the steps involved with each different connection method. These methods are unchanged from 3000 series units.

2.6.1 Counter Connection through a Web Browser

This connection method is the recommended method for use when configuring IP enabled counter units. It cannot be used for relay-only units.

> Connecting via IP through a web browser is the recommended connection method for configuring all IP enabled counter units.

This is a simple case of running your preferred Internet browser software and connecting to the counter via its configured IP address. Simply enter the IP address in the address bar of your Internet browser Internet Explorer and Chrome are shown below:

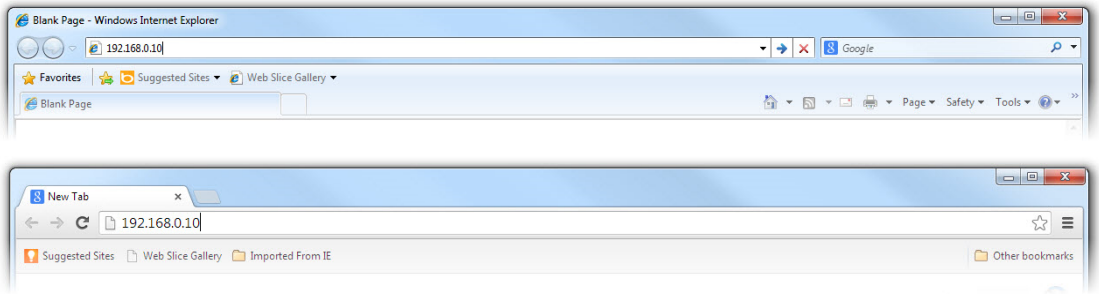


Figure 2.6.1

> By default, a new IP enabled counter will have an address of 192.168.0.10, and subnet mask of 255.255.255.0. All IP enabled counters from the Irisys factory will have these IP details configured initially.

> Note: Your laptop must be on the same IP range as the counter's IP address in order to communicate with it. This is set by the IP address and subnet mask parameters but is beyond the scope of this document. If you do not know how to do this, contact your network administrator or IT Support.

When connected to the counter for the first time, you must enter a valid user name and password before you can access the counter settings:

Figure 2.6.2

The default username is 'admin' and the default password is 'installer'.

The password can be changed later, as part of the counter setup, if required. This will prevent un-authorised changes to the counter's configuration. Unauthorised changes to the count line and/or counting parameters may cause count inaccuracies.
As long as the username and password are entered correctly the main "Welcome" page will be displayed.

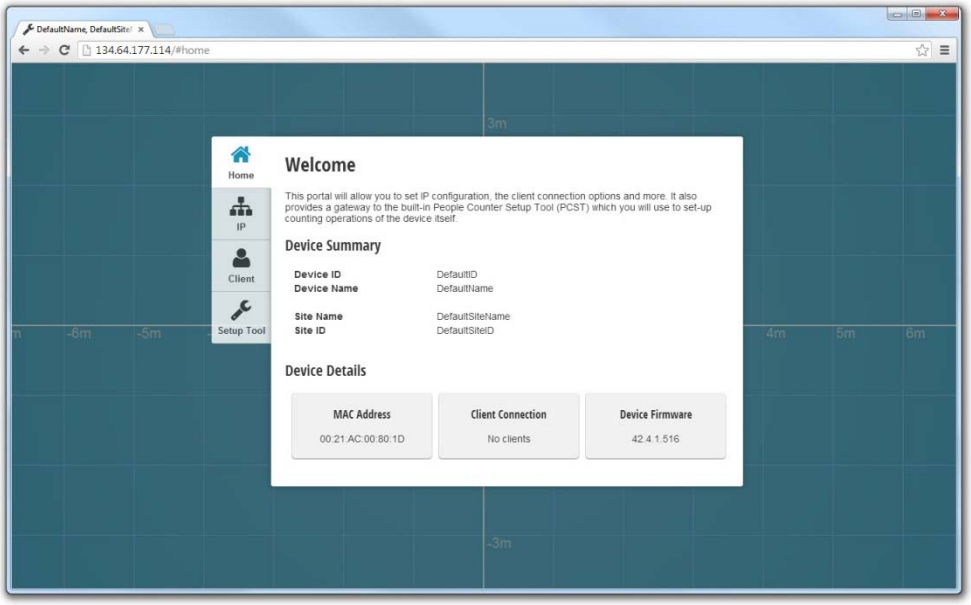


Figure 2.6.3

The welcome screen does not require the Microsoft Silverlight add-on to be installed; a link is provided in this page so that you can download Silverlight and proceed with the configuration of the counter – which does require Silverlight. Also, IP Configuration, Client Configuration, Connections, and Password pages do not require the Silverlight add-on.

Remember that configuration through a web browser is only possible on IP enabled counters via IP connection.

The MAC address shown on the Welcome page is unique for every IP Master counter. It can also be retrieved using the API. See the relevant programming document for details.

See 'Appendix C Firmware Versions' for details of different IP firmware versions that are available.

2.6.2 Counter Connection through the Setup Tool Executable

To run the software simply select from the Windows Start menu or double click the desktop icon, as appropriate. The main window will open and you will be given the choice to connect via IP connection, serial connection or through a Connection Router server.
To connect via IP address simply select 'IP Address' from the drop down and enter the relevant details, and then click 'Connect':

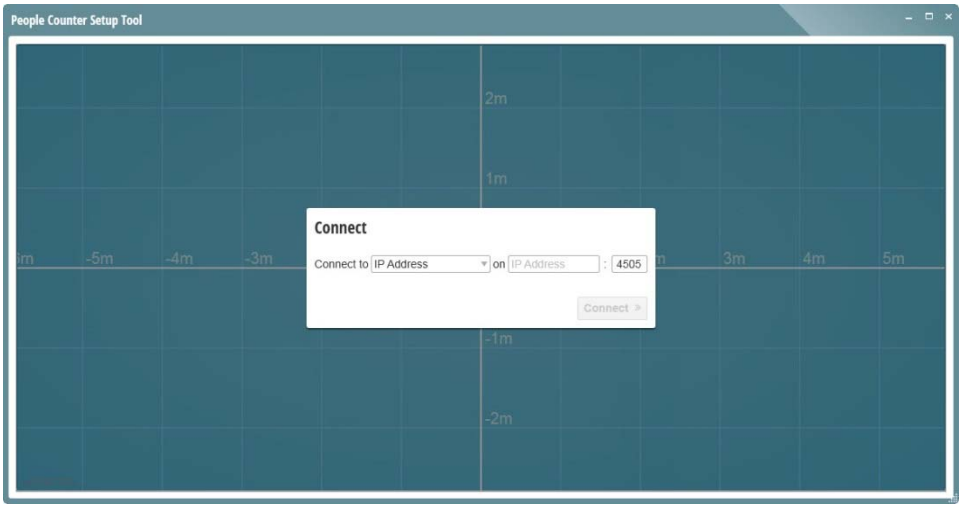


Figure 2.6.4

In most cases the port details will always be 4505. Only change this if you have configured port forwarding on your router. In these cases the router should port forward to port 4505 of the relevant counter and you would enter the correct port to be forwarded here.

Remember that the utilisation of port forwarding is only possible when using the exe version of the setup tool software. Port forwarding is not possible when connecting via web browser.

To connect via a serial connection simply select 'Serial' from the drop down and choose the correct COM port number, and then click 'Connect':

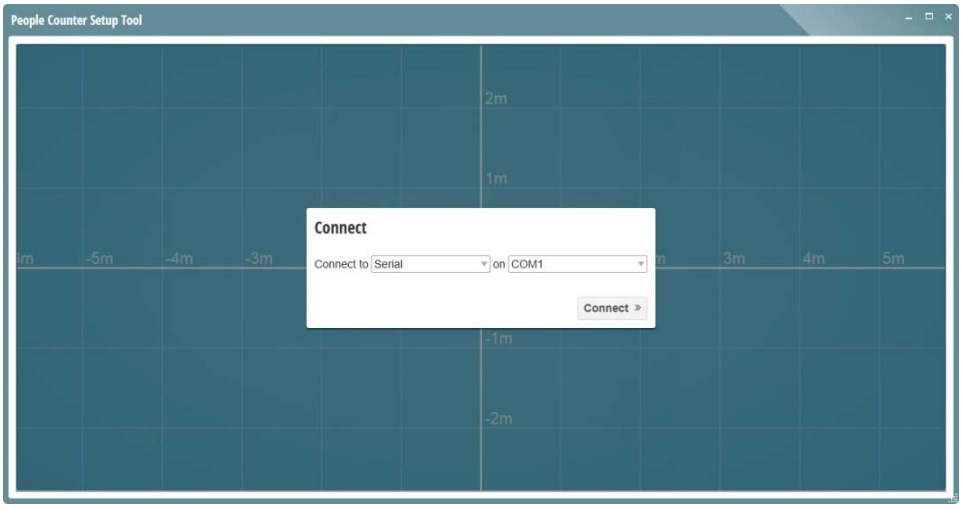


Figure 2.6.5

To connect via a Connection Router server, again select ‘Connection Router’ and enter the relevant IP and port details, and then click ‘Connect’:

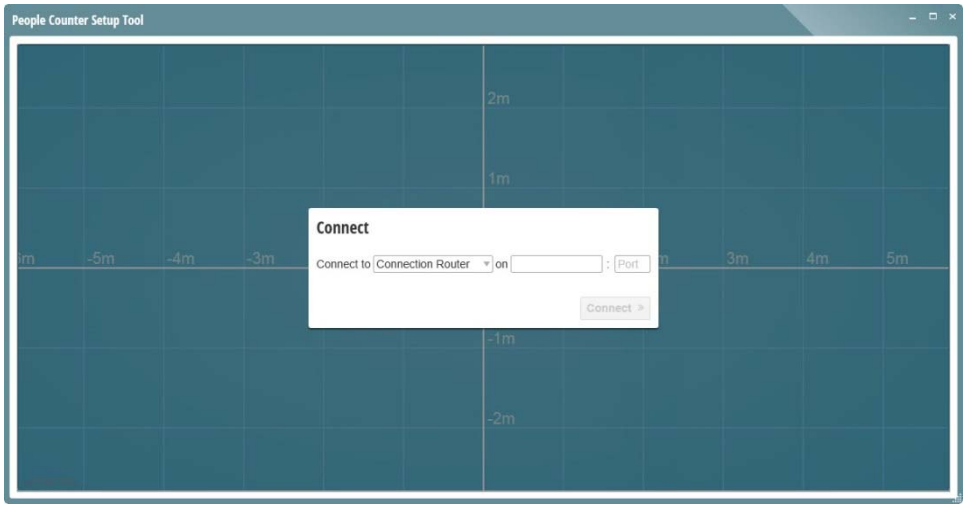


Figure 2.6.6

Most features of the serial version setup tool are identical to the embedded software accessible via IP through an Internet Browser.

Configuration of the IP enabled counter using the executable version of the setup tool can be via an IP connection, local serial lead, or via a connection provided by a Connection Router server.

Configuration of relay enabled counters using the executable version of the setup tool is via serial lead connection only.

Connecting via IP through a web browser is the recommended connection method for configuring all IP enabled counter units, see section 4.1.

The main options for configuring a counter using the setup tool executable are detailed in section 6.

2.6.3 Finding out a Counter’s IP Address

If a counter’s IP address has been changed, and you don’t know what it is, then there are a few things that you can do in order to re-establish communication with a counter.

Firstly, if you think you know the IP address but then the details you have don’t work, remember that your laptop must also be on the same range as the counter in order to make a connection, so check your IP address and subnet mask on your laptop and change if required.

Also make sure that you have access to the counter. If the counter is in a remote location and is protected by a firewall then you must ensure that the firewall is allowing you a connection through, and on to the counter, and that the correct ports required are enabled (port 80 and 4505 are required for a setup connection). Also any firewall or anti-

virus software on your laptop could be preventing the connection from being made, so temporarily disable them and see if that works.

By default, a new IP enabled counter will have an address of 192.168.0.10. All IP enabled counters from the Irisys factory will have this IP address configured initially, so if you do not know the IP address of a particular counter, try this.

If the default address does not work then you now have one or two choices depending on whether you have a 3000 series or Gazelle series unit:

- For 3000 series units all you can do is connect to the counter via a serial connection and change the address that way – see section 4.2 for details.
- For Gazelle series units you can connect via serial to change the IP address, or you can temporarily reset the IP address to the original default address (192.168.0.10) in order to then change it to what you want it to be.

To reset the IP address to default on a Gazelle unit, follow these instructions:

1. Remove the front cover if present.
2. Make sure that the counter is powered up.
3. Locate the small hole in-between the red and green LEDs on the front of the counter. Using a paper clip, or thin screwdriver, press and hold the reset button inside this hole.
4. Watch the two LEDs as you press and hold down the button and after only about 1 second, the LEDs will flash alternately and you should release the button.

The IP settings will now be reset to the factory details. Take care not to hold the switch down for longer as, after 5 seconds, all settings in the counter will be reset to default values!

If, after resetting the IP details, you change your mind and want to put the counter back to its original IP address (in order to retrieve data for example), then simply reboot the counter without making any changes and it will go back to its original IP settings present before you pressed the reset button. Note that a full counter reset to all default values cannot be undone.

For more help with making an IP connection, see also, Appendix B IP Connection Problems.

2.7 Multiple Counter Connections

Gazelle units can support multiple connections and when connected to the counter using PCST additional software tool connections will be highlighted in the bottom right of the ground plane view:

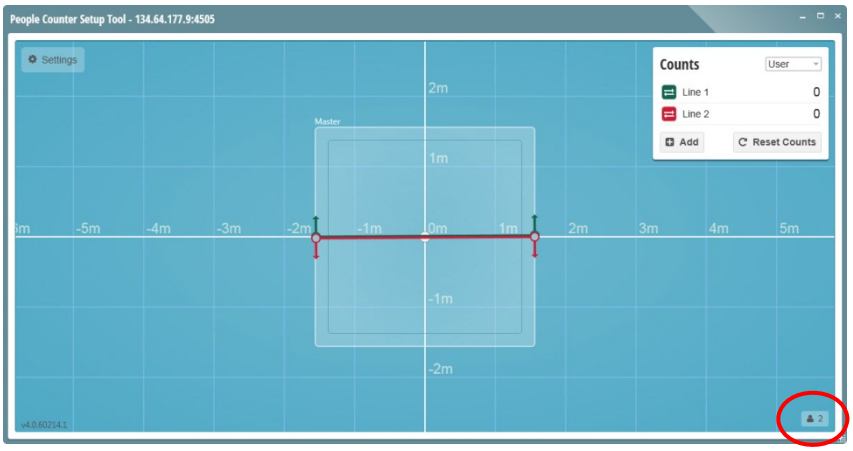


Figure 2.7.1

Hovering the mouse pointer over the symbol will reveal a tooltip:

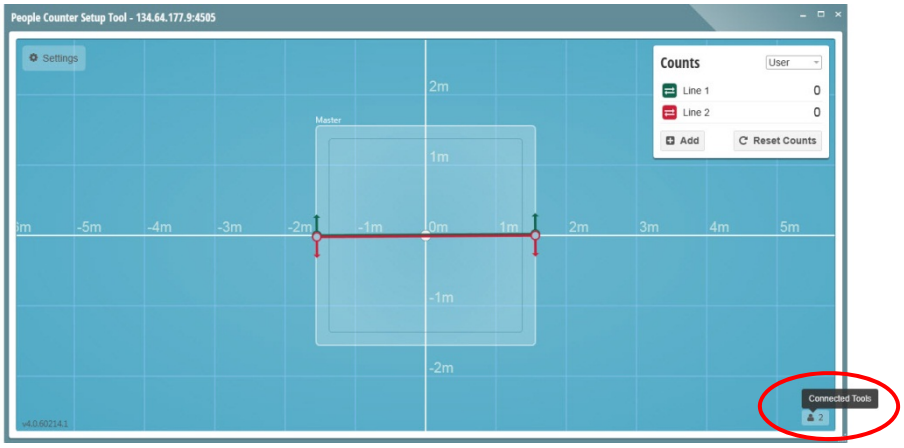


Figure 2.7.2

Remember that 3000 series units do not support multiple connections. Attempting to connect to a 3000 IP unit which already has a connection will result in an error:

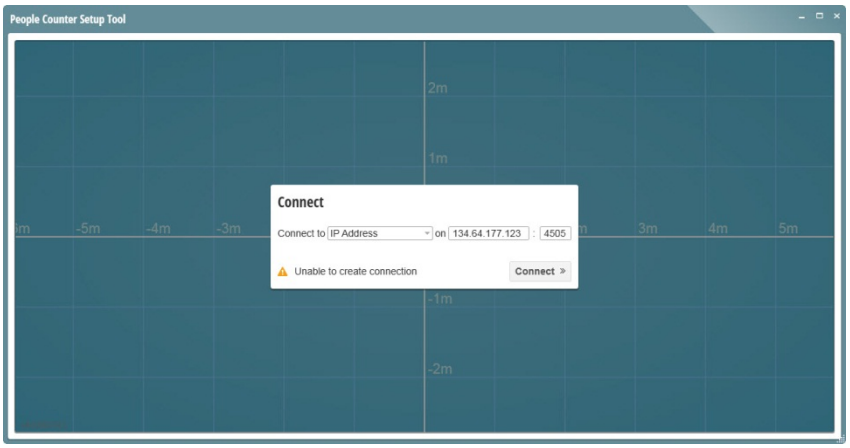


Figure 2.7.3

3 Counter Configuration

3.1 Introduction

Counters require a number of different settings before they will function correctly and provide valid count data for use in a complete counting system.

Firstly, all counters must also be configured so that they count correctly, and accurately. This is done by configuring the virtual counting lines within the counter's field of view and choosing the correct count mode as well as other counting parameters.

Secondly, counters must then be interfaced correctly with the rest of the counting system so that the count data is transferred onwards correctly:

- With IP enabled devices, these must be configured to communicate on the IP network. This involves entering a unique network IP address and other relevant network details. They may also require IP address details of where they must connect to and how often if applicable (Client connect mode, see section 5).
- With relay output units, these will need to be interfaced with their respective data logging unit so that the relay pulses are interpreted correctly.

Additionally, if the counter network has a CAN I/O module attached, then this too must be configured correctly so that it interfaces properly with the external inputs and outputs that it is connected to.

The way these settings are made is sometimes different depending on the connection type (serial or IP) and method (web browser or executable software version) employed. See below for more details.

The following sections detail configuration of the IP counter via an IP connection, and using an Internet Browser. For details of configuring the Relay enabled units, see section 6.13.

3.2 The Web Browser “Welcome” Page

The Welcome page shows the MAC address and firmware version of the counter, along with details of any currently active connections to the counter. Note some settings are not shown on relay only devices.

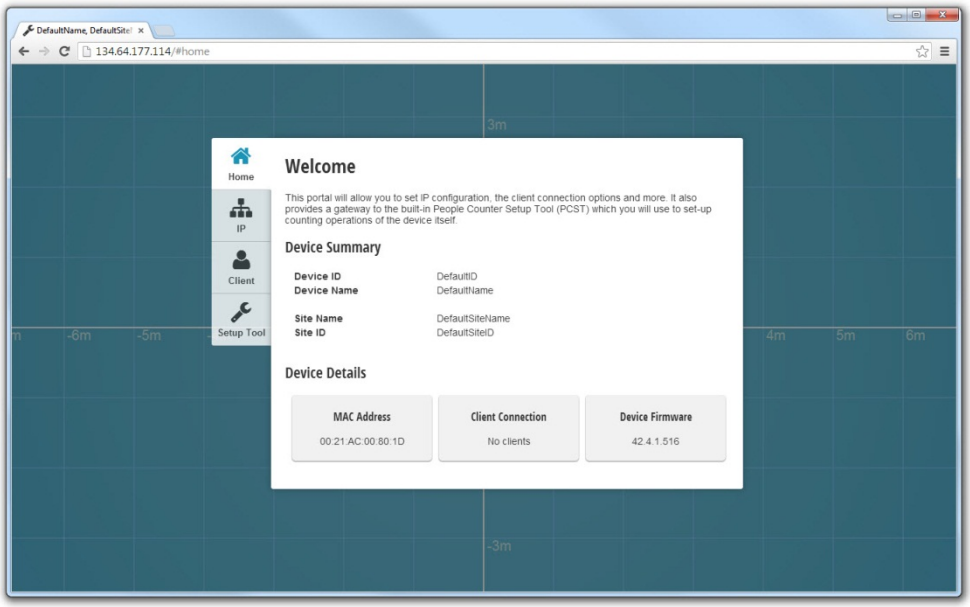


Figure 3.2.1

3.3 Navigation Menu

The navigation menu allows you to configure various settings within the counter:

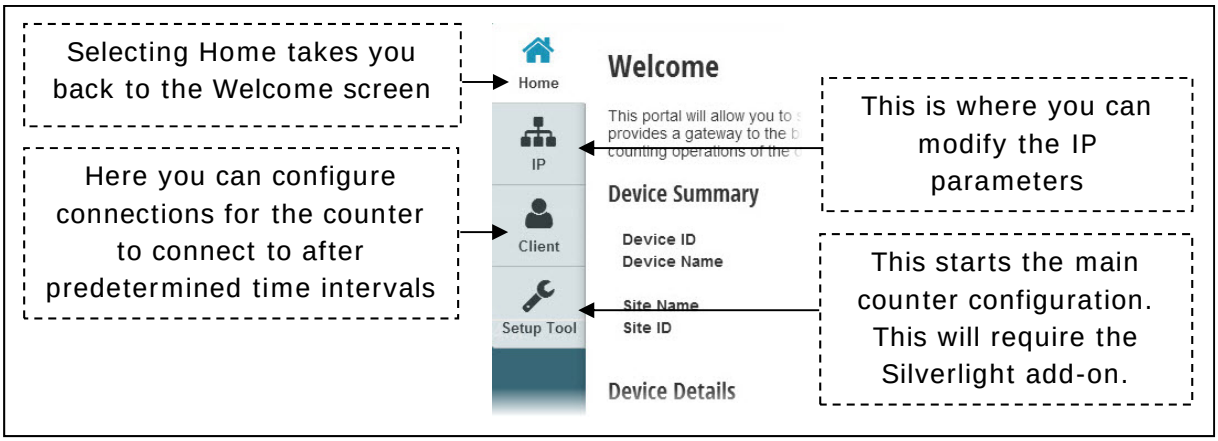


Figure 3.3.1

When connecting to relay only counter (without an IP connection), the PCST software will go straight into the Setup Tool option, see section 6, ‘Setup Tool’.

4 IP Configuration

IP enabled counters must be configured with appropriate network settings for the network that they are connected to.

The main details required are:

- IP address and subnet mask
- Gateway address - in order to connect to other networks (and the internet)
- DNS details - so that the counter can resolve hostnames (if required)

In the vast majority of installations on a customer's own network, they will manage the whole network themselves and therefore you will need to enquire to see what network details have been allocated for use. Once configured with the supplied details, the counter will then be on the same network as the customer's other IP enabled equipment, such as (potentially) an Epos system, PCs, servers and printers.

If you are installing IP counters on your own isolated network, separate from the end customer's network, then it is up to you to specify the required network settings.

Always remember that your laptop must be on the same IP range as the counter's IP address in order to communicate with it. By making changes to the counter's IP settings, in most cases, this will require the modification of the laptop IP settings in order to reinstate network communication. This is beyond the scope of this document, so contact your network administrator or Support department if you are unsure of how to do this.

Note: If you change the IP address and then forget what it is, you will not be able to connect to the counter in order to change the IP address to something else! If this happens you must use either, the PCST and a local serial lead connection, or in the case of Gazelle units you can temporarily set the IP address to default, see section 2.6.3 for details of these two procedures.

4.1 Changing IP Settings via Web Browser

Once connected to the counter choose the 'IP' option to access the network settings:

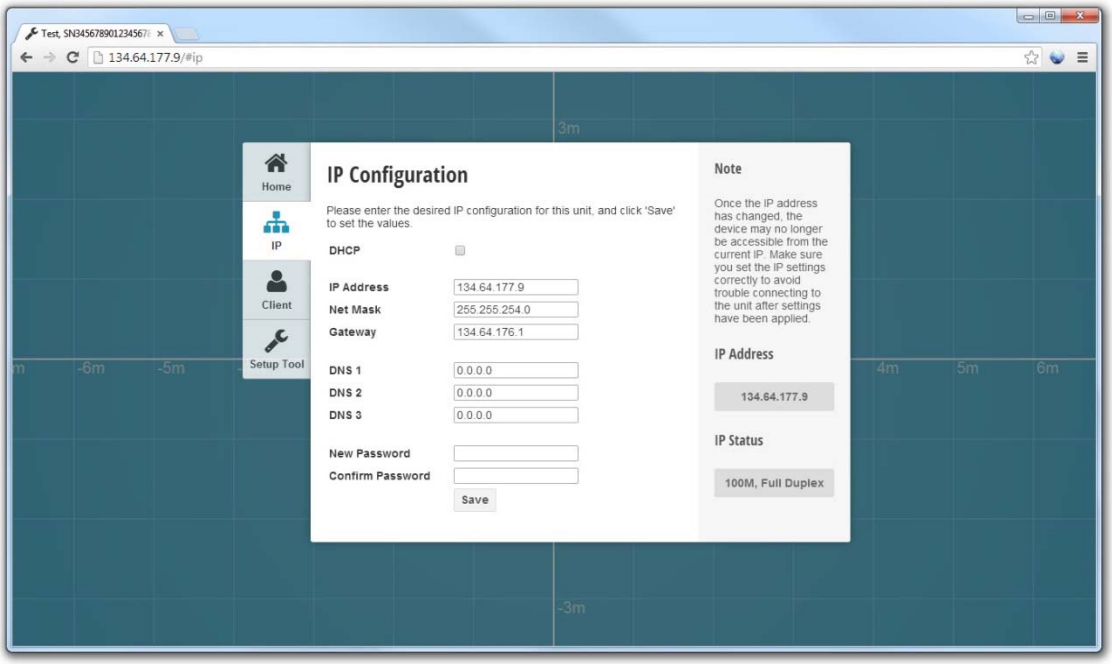


Figure 4.1.1

On the right is shown the IP status. This is the counter's current connection to its switch and not necessarily the same as your connection (if connected via two different switches, for example). Valid connection speeds can be 10M or 100M; valid connection types can be Full Duplex or Half Duplex.

The IP status information is only available when connected via IP to the IP enabled counter using an Internet Browser.

If you change any of the IP settings, the web application will apply the settings and then redirect to the new IP address.

If you change the IP address of the counter, but the new IP address is not accessible to your laptop then the redirection will fail. Simply adjust your laptop's IP address/subnet mask so that it is on the new range and refresh your browser to connect again.

Take care when enabling DHCP, as your webpage will not be able to automatically reconnect to the counter on the new IP address as it won't know what that new address is. In these cases you will need to find out what IP address has been assigned by the DHCP server and manually enter this address in the address bar once again.

Do NOT enable DHCP on a counter which has no access to a DHCP server as the counter will be left with no IP address! If this ever happens you will need to connect via serial using the installed exe version of PCST in order to specify an address manually again.

4.2 Changing IP Settings via Setup Tool Executable

You can change the main IP settings (IP address, subnet mask and Gateway address) using the installed ‘exe’ version of the setup tool when connected to the counter via a serial connection only. It is not possible to change IP details using the exe PCST when using an IP connection.

Changing the IP settings via serial connection through the executable version of the setup tool may be required as a first step to get the unit(s) communicating correctly on the network, or it would be required if ever the IP settings were changed and then later forgotten.

When connected via serial, access the IP settings from the main ‘Settings’ menu:

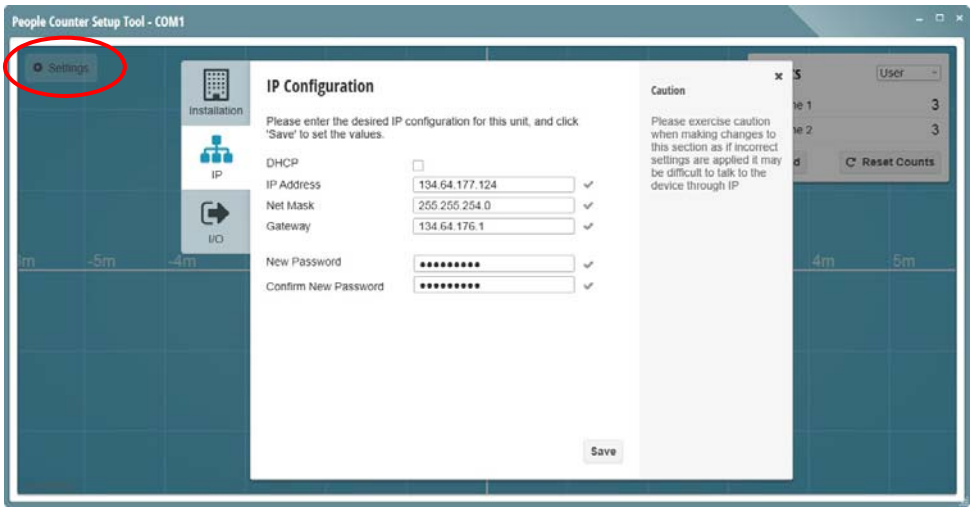


Figure 4.2.1

Once your required settings have been made, click the ‘Save’ button. The counter will then reboot its IP connection with the new details and will be accessible over IP after approximately 30 seconds. The connection via serial will remain until you disconnect.

If ever the IP address of a counter is not known, a serial connection to the counter in conjunction with the exe version of the PCST software will allow the IP details to be ascertained and/or changed.

Additionally a serial connection to a counter allows a forgotten password to be changed via the above method using the exe version of the PCST software.

5 Client Configuration

This section allows you to configure up to three host machines that the counter can connect to (only one with 3000 series units). When a counter initiates a connection ‘out’ in this way, this is commonly called a ‘Push’ connection and requires the intended target software to be written so as to be waiting for incoming connections.

Connections such as these can be used for data retrieval and/or estate management using the Irisys Harvester software and Irisys Estate Management Software Suite respectively.

In some cases this will be required because connection ‘in’ to a counter is not possible due security concerns and appropriate firewall settings being in place. Normally, an outbound connection is easier to get approved.

An IP address, or hostname, and Port details of the remote machine are required, along with a reconnect time in seconds.

5.1 Client Connection Configuration

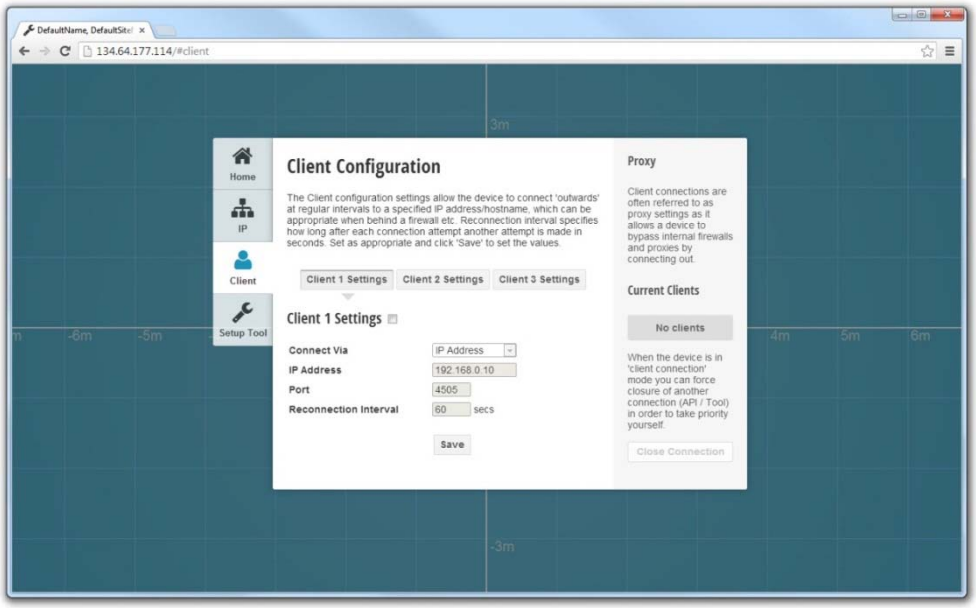


Figure 5.1.1

To configure a Client connection, first enable it by placing a tick in the Client settings checkbox, and then you can configure an IP Address or a Hostname. In this mode, an IP enabled counter will initiate a connection out rather than waiting for a connection to come in to it. Once a connection has been established out through the firewall, by the counter, it can be used for data collection and/or estate management. See the relevant programming guide document for details of how to implement these functions in your own software if required. The counter will attempt to initiate a connection once the Client Reconnection Interval is reached.

> In order to utilise Client Connection mode with your own software, your software must be written to accept an incoming connection. Once the connection has been accepted, the standard API functions must be used to retrieve data. See the relevant programming guide document for details.

The Client Connection Configuration details can also be retrieved and set via the API. See the relevant programming guide document for details.

5.2 Connections

If any other software is connected to the counter at the same time as you are, the number of additional clients connected will be shown at the bottom of the main Welcome page:

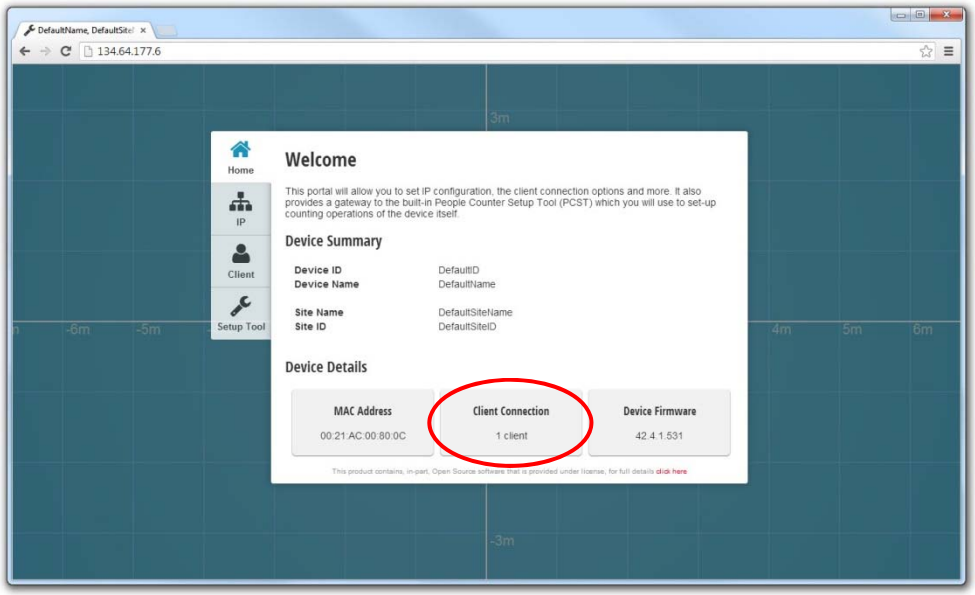


Figure 5.2.1

... and also on the Client connect page itself:

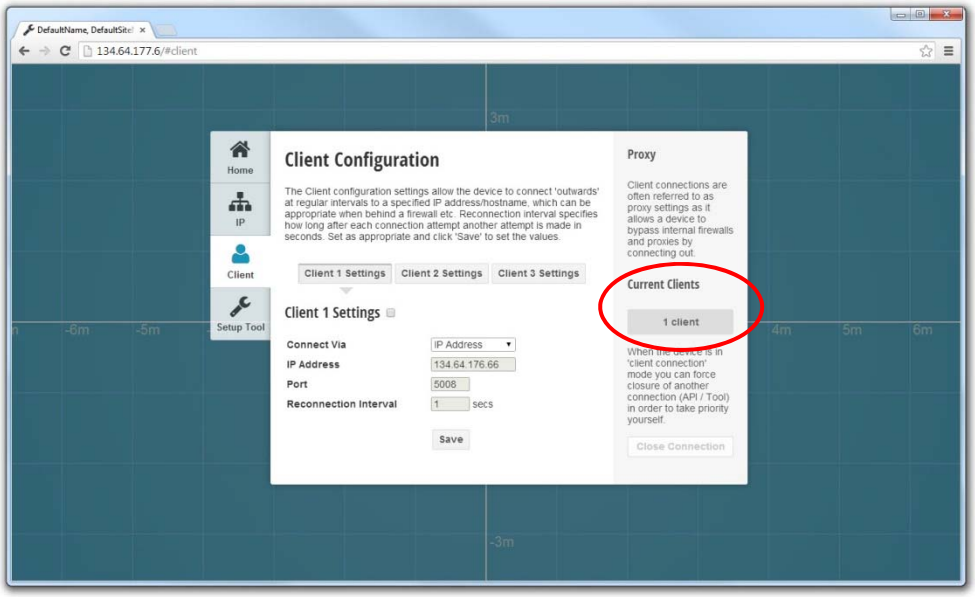


Figure 5.2.2

Once all the available connections are in use, a counter will not support any further connections for either setup or for data retrieval. Gazelle units can support up to four simultaneous connections but a 3000 series IP unit can only support a single connection. Therefore with 3000 series units, if a Current Client connection is listed, you will not be able to proceed to the 'Setup Tool' option – attempting to enter Setup, when all connections are already in use, will result in an error.

Connections stated here refer to those via another setup connection to the Silverlight Setup Tool pages or through the IP API. For details of initiating a connection through your own software, see the relevant API programming document.

5.2.1 Forced Close Connections

This feature is not yet implemented.

6 Setup Tool

This part of the counter setup is for configuring the main counting functionality of the unit. Previous sections discuss the configuration of network and data collection aspects of an IP enabled counter only.

This section is relevant to all counter variants.

All counters must be configured correctly for their installed environment and great care should be made to follow Irisys recommended practices and configuration.

When connecting to an IP enabled counter to configure the counting functionality through a web browser, the Microsoft Silverlight add-on is utilised to allow moving graphics in a web page. For this to work correctly port 4505 must be available and not blocked.

> Note: Silverlight cannot be port forwarded through a router to a different port – it will not work. If you need to port forward from 4505 to 5000 for example, you should use the installed exe version of PCST to configure the counting functionality as this does not utilize Silverlight and therefore will accommodate port forwarding, see section 6.

Using the Setup tool to configure counting functionality is identical whether you are connected via IP through a browser, IP via the installed PCST software or serial via the installed PCST software.

6.1 Configuration Wizard

Once a connection has been established, any new or unconfigured units will trigger the 'Configuration Wizard' to run:

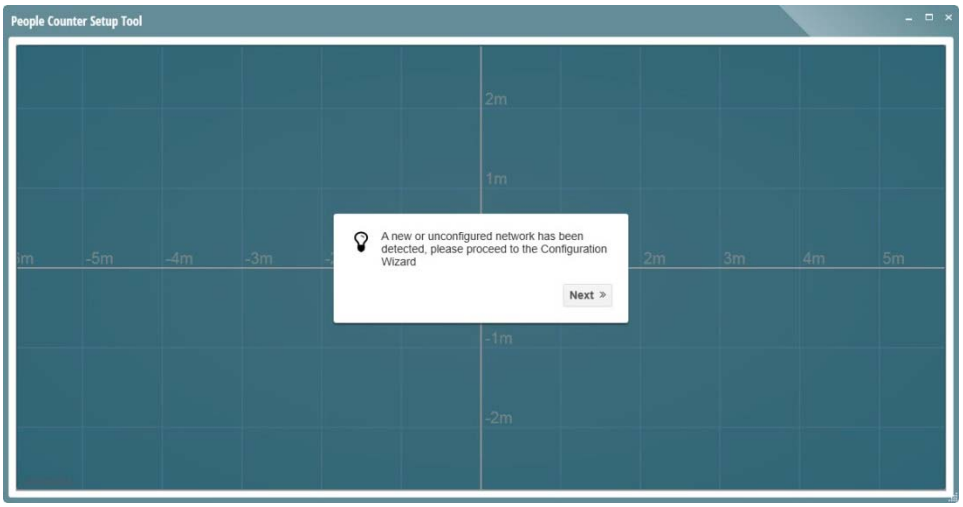


Figure 6.1.1

> When configuring multiple relay units as part of a wide opening network, one of the units must be configured as the 'Master'. See section 6.1.1 for details.

If two or more units are detected connected together as part of a wide opening network, an additional notification message may be displayed first:

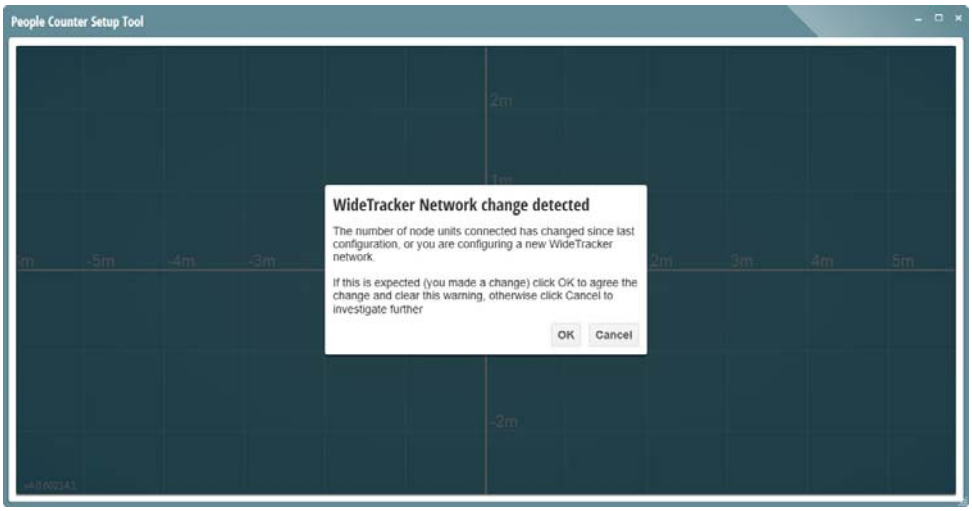


Figure 6.1.2

This notification will be displayed when configuring brand new, previously unconfigured, units as part of a wide opening network, or when adding or removing units from an existing installation.

If this message is seen on a configured and previously working wide opening network – where you have made no changes – this would indicate a problem with the network, such as a physical break in the cabling between units or a loose connection which would make the number of recognised units go up and down at random intervals. Click ‘Cancel’ in these situations, and investigate and put right the problem before continuing.

Assuming the notification message is expected click ‘OK’.

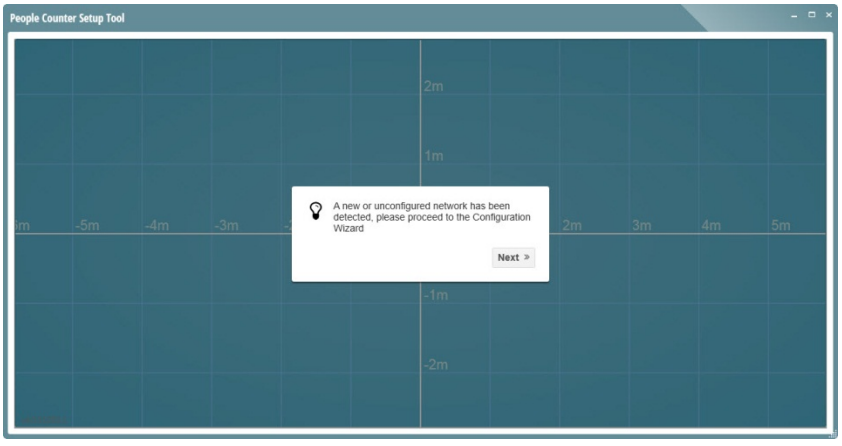


Figure 6.1.3

You can also click ‘Next’ at this prompt and continue with the configuration.

When configuring a single unit, the only information that you have to enter is the ceiling height of that unit. You can also enter X and Y values if you want to, but this is not a requirement for single units (these can be left as default 0 values on a single unit):

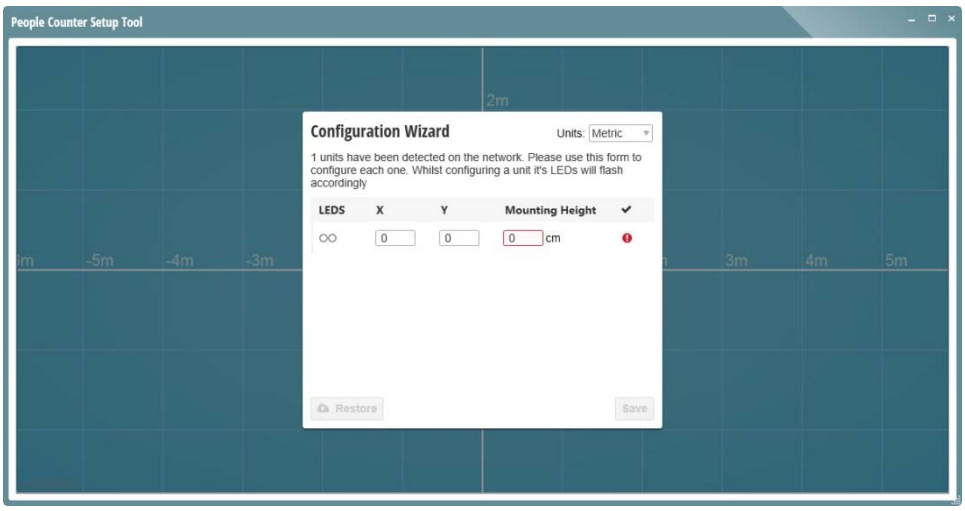


Figure 6.1.4

In previous versions of PCST there was a requirement to enter 'Comms IDs' at this stage. In this and future versions, this is handled automatically.

When entering the height information (and/or X & Y values) for a counter, that particular unit will begin flashing its LEDs for easy on ceiling identification.

You can choose between Metric and Imperial measurements using the drop down in the top right corner of the Configuration Wizard dialog.

Once a valid height has been entered click the 'Save' button to continue:

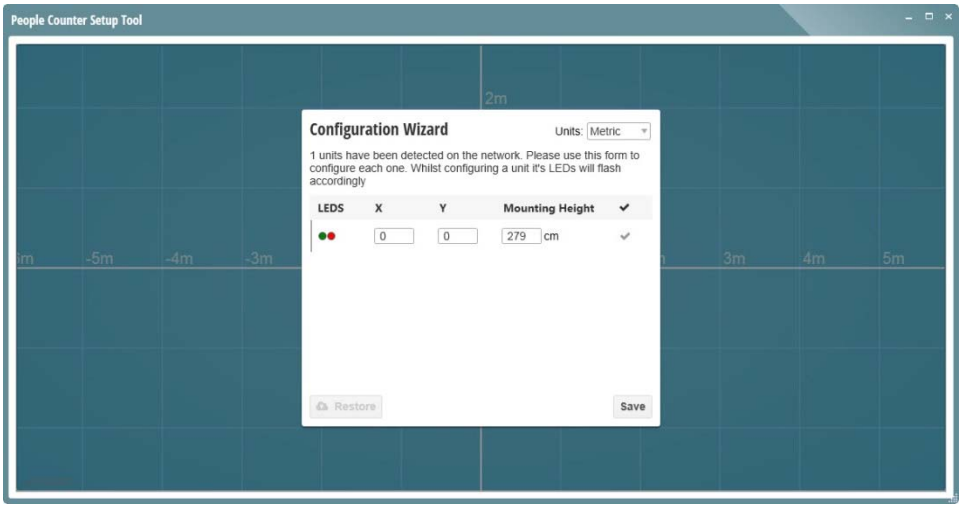


Figure 6.1.5

Always enter height (and X & Y information, if relevant) for each counter as accurately as possible. Never guess or estimate any required measurements.

Note that heights outside of the valid mounting height range will be highlighted with a red exclamation mark, and you will not be able to continue:

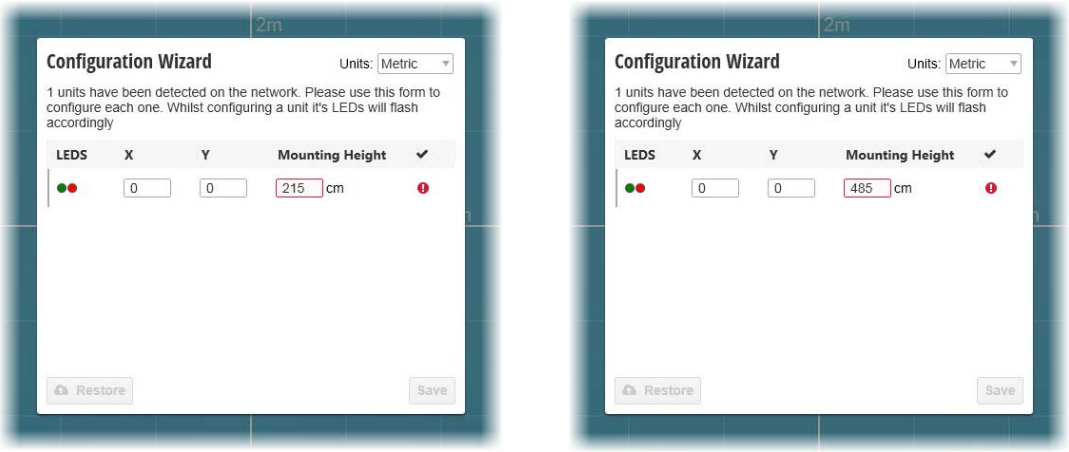


Figure 6.1.6

All counters must be mounted at an allowed height within the mounting height range relevant to the counter lens (60°, 40°, 20°, etc.). If a counter is too or too low then it should be moved so that it is in the allowable height range.

Remember that the height ranges for each counter variant can be found from the mounting height graph document, number IPU40188.

Additionally, valid heights which are outside of the ‘recommended’ range will be highlighted with a yellow exclamation mark, and you will be able to continue:

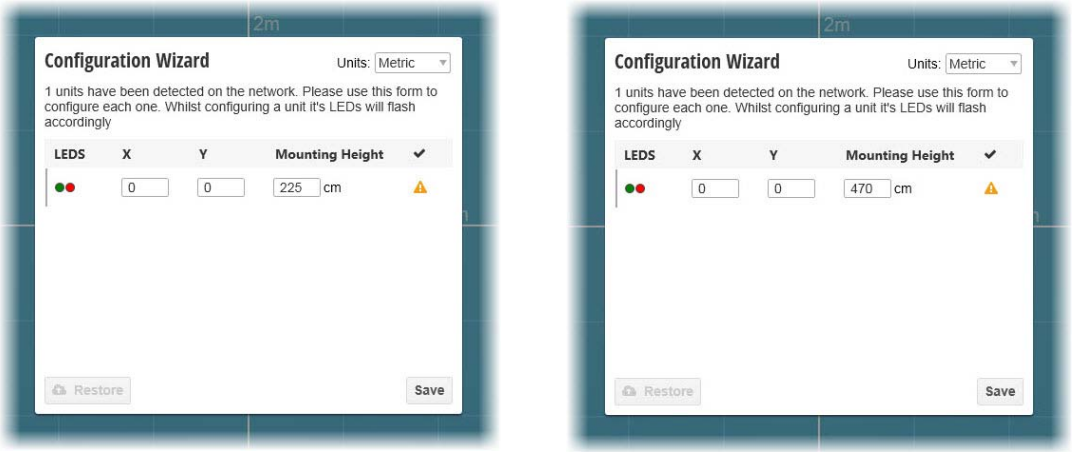


Figure 6.1.7

Whenever possible, install counters in the recommended height range, instead of at the extreme top or bottom of the allowable height range.

When two or more units are recognised, you must again enter the relevant information for each unit. But first, you should check that the correct number of units is shown. If

only two units are shown but there should be three, for example, then you would need to check the wiring and power to each unit, as missing units indicate an installation problem.

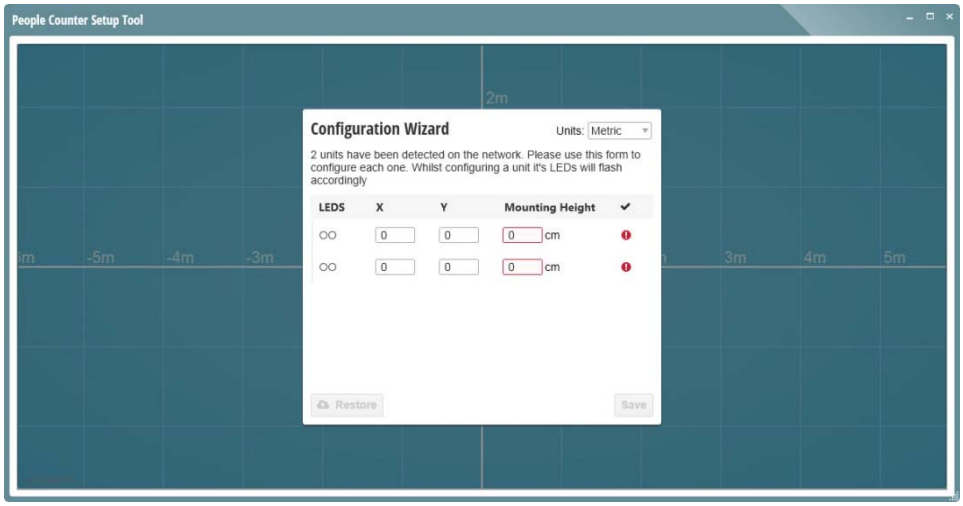


Figure 6.1.8

Assuming the correct number of units is shown you should now enter height and X & Y information for each one:

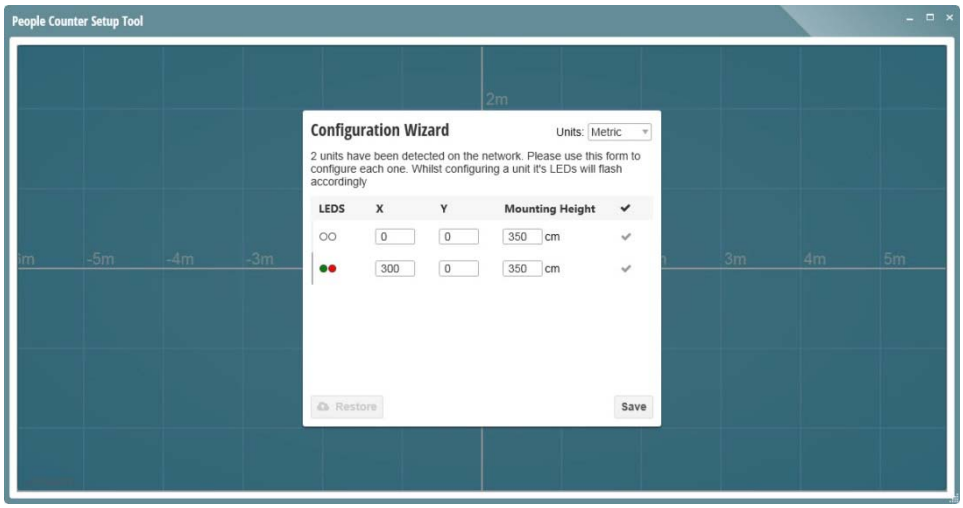


Figure 6.1.9

Note that units may not be displayed on screen in the same order that they are installed on the ceiling. Until units have been configured with correct X & Y coordinates they do not know where they are in relation to each other. For more information about configuring X & Y coordinates see the next section.

To ensure that you are configuring the correct unit with its required settings always look up at the physical units on the ceiling in order to see which one is flashing its LEDs. This is important because two or more units, which are connected on a wide opening network, will not necessarily be shown in the order that they were installed on the ceiling.

Once all the units are configured correctly, click the ‘Save’ button.

6.1.1 Configuring Relay Master and Node Units

On relay-only units (such as the IRC3020), an additional step in the configuration wizard is required when two or more units are connected together to form a wide opening network. This step assigns one of the units to be the ‘Master’ unit on the network. This is necessary because each relay counter can be set in software to be a master or a node as required. The master unit will output counts from the complete network, and as such the unit connected directly to you data logging device should be configured as the master. IP units do not require this step as the hardware is physically different in master and node units, and you simply select the required unit type(s) for your installation.

On first connection to a newly installed wide opening network of relay-only units, the following selection dialog will be shown:

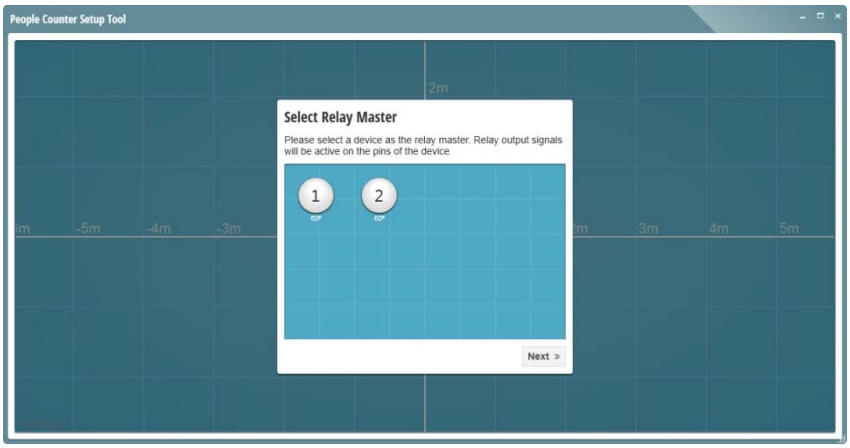


Figure 6.1.10

Note that the numbers displayed on each unit may not relate to the units physical position on the ceiling. It is necessary to click on a unit within this selection screen, so that it is highlighted, and see which physical unit on the ceiling starts flashing its LED ‘identification sequence’.

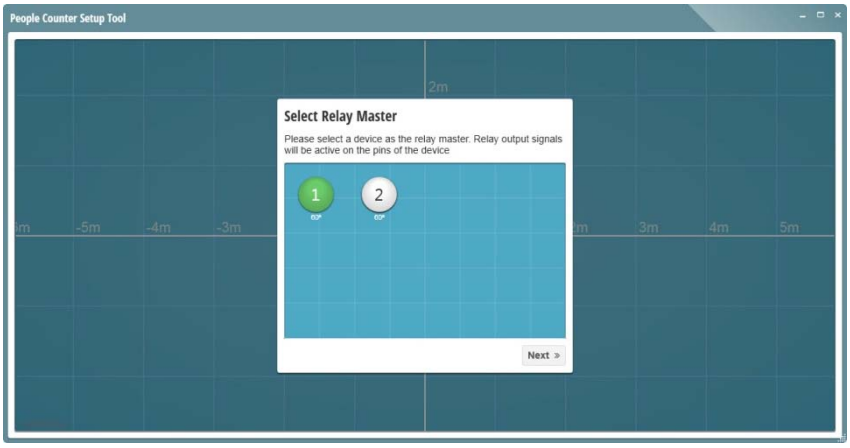


Figure 6.1.11

The unit connected to your data logger must be configured as the master unit regardless of its physical position on the network. If you configure the wrong unit to be the master then no relay pulses will be received at your logger.

If the unit on the ceiling which is flashing its LEDs is the one which has its relay outputs connected directly to your data logger, then just click ‘Next’ and carry on with the rest of the configuration process – this unit will selected to be the master on the network. But, if this is not the unit connected to the logger, click the other unit(s) until the correct one starts flashing its LEDs then click ‘Next’.
Once the master has been assigned you should continue with the configuration process at section 6.1.

If you accidentally set the wrong unit to be the master unit this can easily be changed by accessing the individual unit settings, see section 6.5.1.

6.1.2 Configuring Valid X and Y Coordinates

If you have only one unit installed you can leave the X & Y coordinates as 0 because no other units will reference it (just ensure that the height is set correctly), but with two or more units each must be positioned correctly relative to the others.

When units are positioned next to each other across a wide entrance or corridor, it is very important that they are configured correctly so that they will work properly together as a ‘wide opening network’. When configured correctly, the tracking of people as they move between each counter field of view will be seamless and will be as if moving across the field of view of one counter with a large field of view.

When configuring X & Y information, you, or the installer if different, should have some idea about how far apart the counters have been positioned and this should be corresponding to Irisys installation practices and recommendations, i.e. units should not be too far apart or not too close together. When configuring the X & Y settings, you are essentially telling the units this positioning information so that they know where they are in relation to each other.

All new and un-configured units will have X and Y ground plane coordinates of 0, 0:

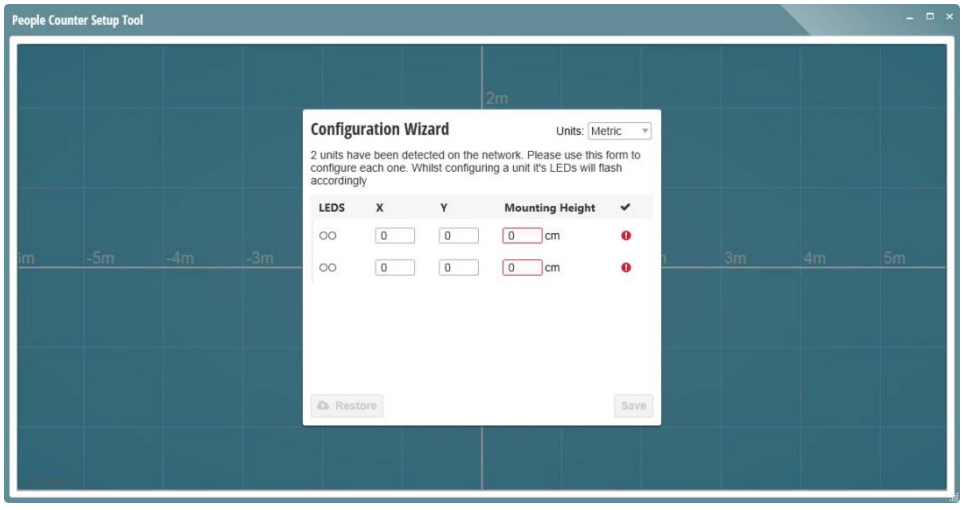


Figure 6.1.12

If you have two or more units connected across a wide doorway or entrance then they cannot all be set to 0, 0 as this implies that they are installed in exactly the same spot – which is not possible – therefore you will need to change them.

To enter new values simply click on any of the edit boxes and the counter which is associated with that particular edit box will start to flash its LEDs from its mounting position. Be aware that the counters may be listed in a completely different order from how they are positioned on the ceiling.

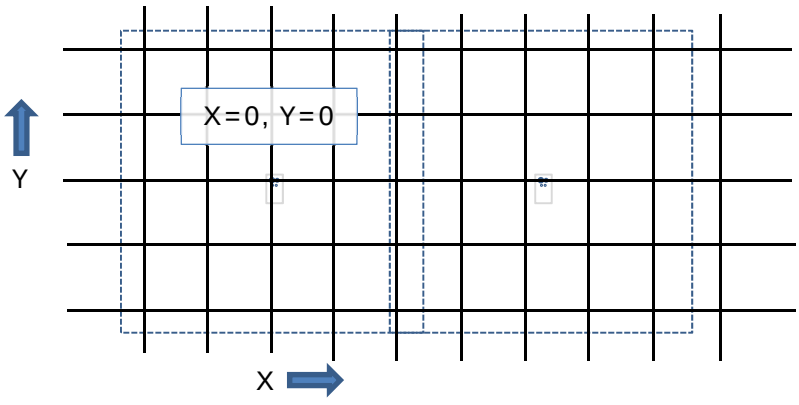
Remember: The units do not know their own position on the ceiling until you enter the X and Y coordinates. Because of this, it is essential that you look for the flashing LEDs on the units (as directed in the wizard) so that you know which one you are currently configuring.

In order to correctly identify each target, as it disappears from one counter's field of view and re-appears in another's, you must specify X and Y coordinates that identify each counters physical location on the ceiling.

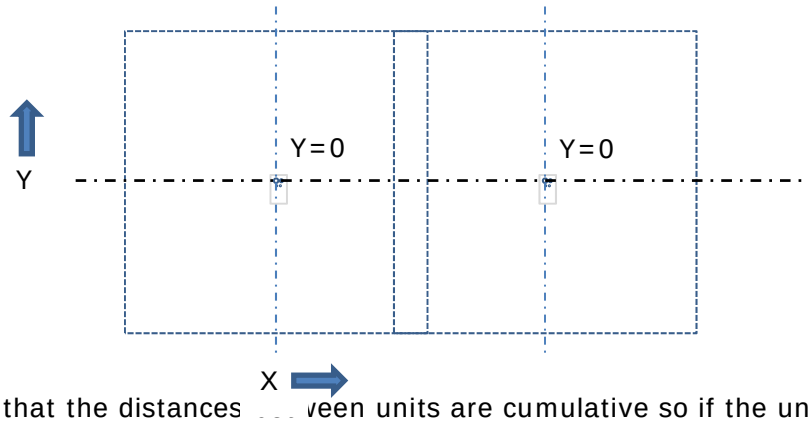
Usually the first counter in the list of units will be the master, but this is not guaranteed, so always check the LED flashes to be sure.

In order to specify the correct X & Y values there are a few rules that you can remember:

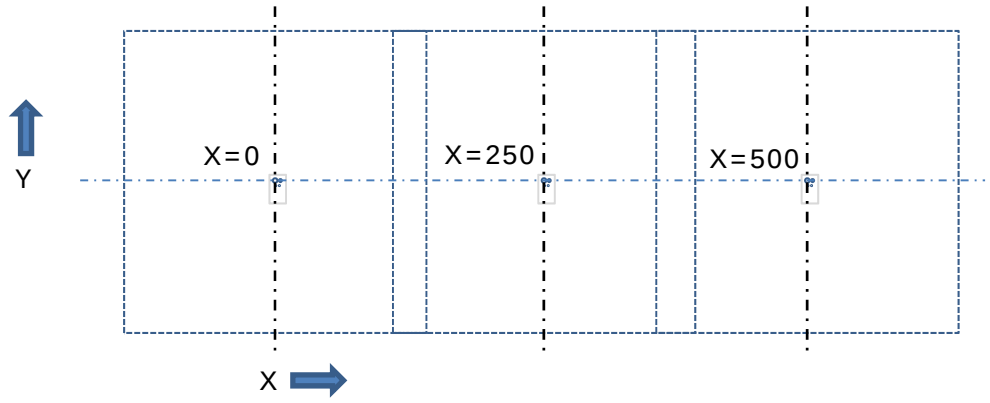
1. You are effectively plotting the units positions on a graph, so it is usually easier to imagine looking down on the area where the counters are installed. If you have positioned the units as recommended in Irisys's installer training then the units will be positioned 'facing' into the area of interest (into the shop, into the building, etc.), with the master counter on the left (as you look into the area). In this case, it is recommended that the left most unit has its x & Y values left at 0 and then reference the other units from that position.



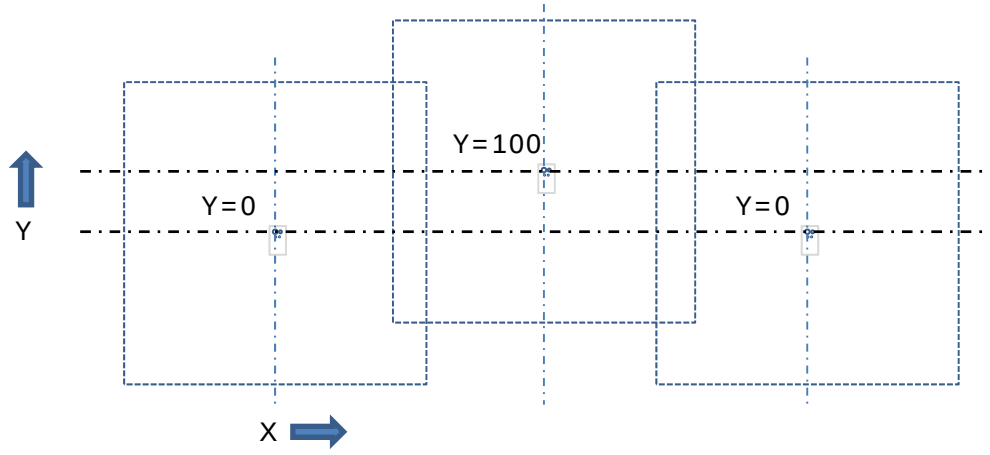
2. Effectively, if the counters have been installed as recommended, the X value will relate to the distance between units left to right, and the Y value will relate to how far in front or behind a counter is relative to the others. If all the units are in a straight line, then this means that the Y values for each unit will be identical and can be left as the default '0'. If you want to change the Y value - you can - just make sure that they are all the same on each unit. Once all the Y values are the same you just need to specify the distances between each unit as the X value.



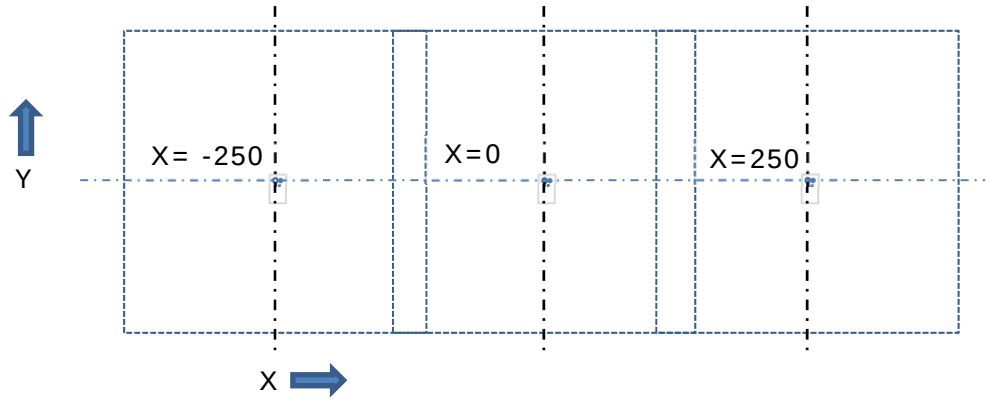
3. Remember that the distances between units are cumulative so if the unit on the left is set to X=0, and the unit next to it is 2.5m away, this one's X value needs to be 250cm. But if a third unit is a further 2.5m away, you would need to specify 500cm for the X value of that unit (250+250).



4. If units are not in a straight line then the Y values will need to change for each one. This will be relevant if a middle unit out of three is further into a store to avoid an obstacle on the ceiling, for example.



5. X and Y values can also be negative if required. This would be necessary, for example, if a left most unit was configured with X=0 but another unit was then added to the left of that. This new unit would need a negative X value to position it relative to the previous unit at X=0. Alternatively you could set the new unit to X=0 and then change the X values of all the other units in order to shift them logically to the right.



The important thing to remember is that the units will most likely not be shown on screen in the order that they are positioned on the ceiling. Because of this, it is essential that you look for the flashing LEDs on the units (as directed in the wizard) so that you know which one you are currently configuring.

The correct X and Y coordinates (and height information) is essential if tracking people between counter views is to work correctly.

When there are multiple units, again, ensure that you look up at the units to see which one is flashing its LEDs. Enter the relevant details for that unit then move on to the next:

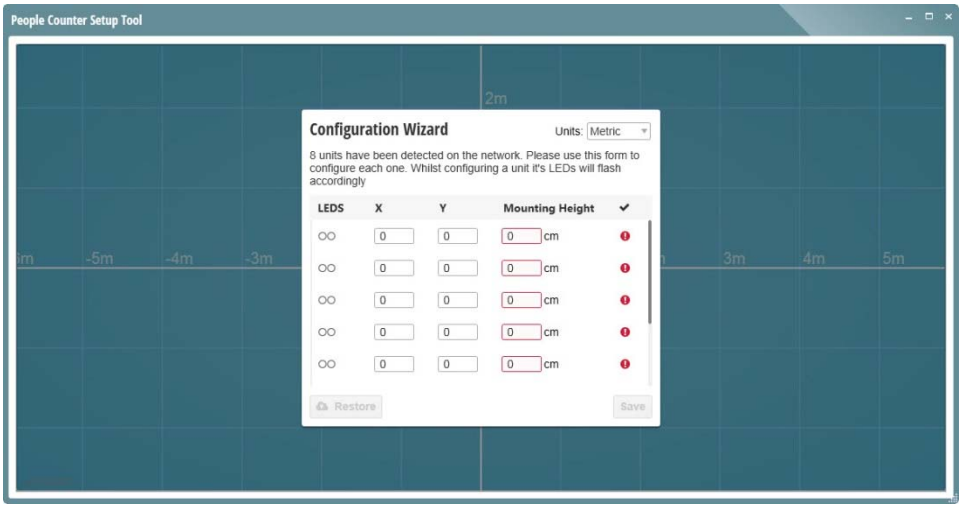


Figure 6.1.13

For large numbers of units it is advisable to write down the details first, for example:

	X (cm)	Y (cm)	Height (cm)
Left most unit (master)	0	0	466
	359	0	466
	718	0	466
	1078	0	466
	1435	0	466
	1797	0	466
	2153	0	466
Right most unit	2516	0	466

Generally the master unit will be shown at the top of the list, and if you have followed Irisys installation recommendations this will be the unit on the left (or if a dual view unit possibly in the middle), but always look for the LED flashing to be sure.

Click the first unit, see which unit starts flashing its LEDs, and then enter the relevant details for that unit:

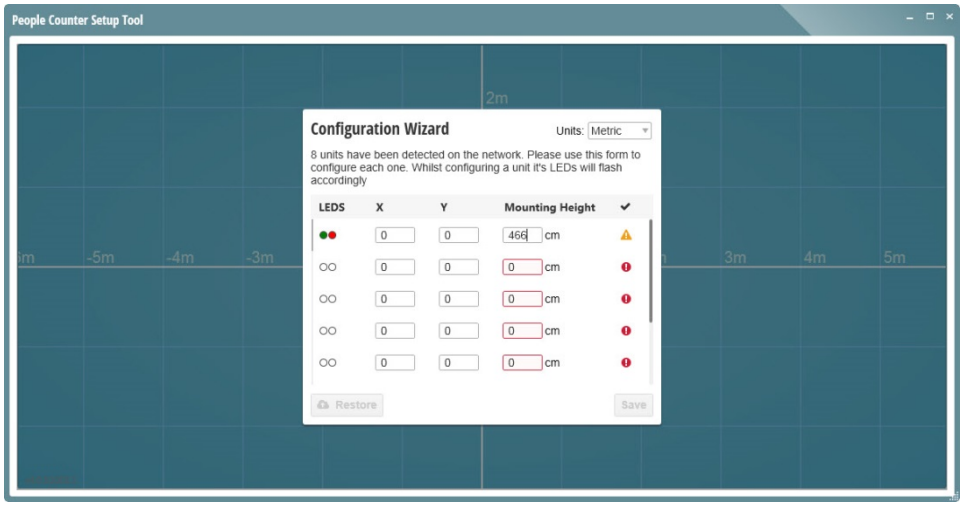


Figure 6.1.14

Then proceed to the next. In this example the second unit listed is actually the sixth unit on the ceiling so these are the details that must be entered:

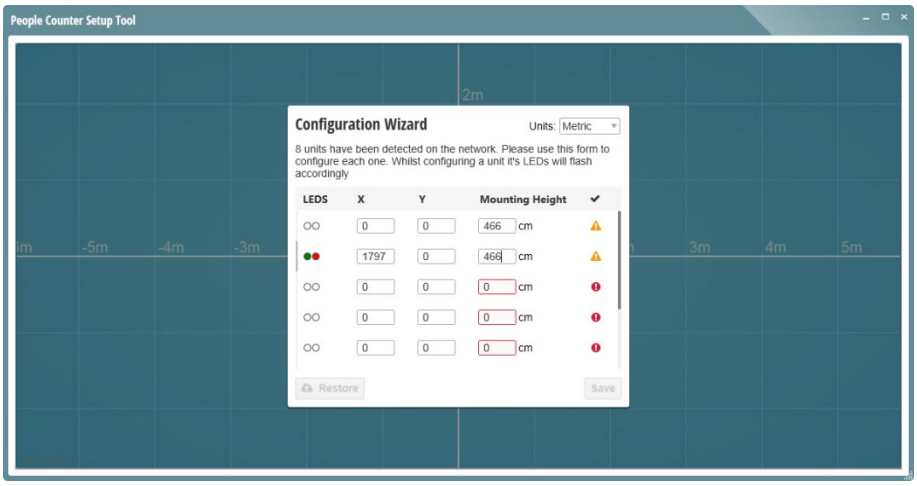


Figure 6.1.15

Continue through the units, making sure that you enter the relevant unit details for the unit flashing on the ceiling.

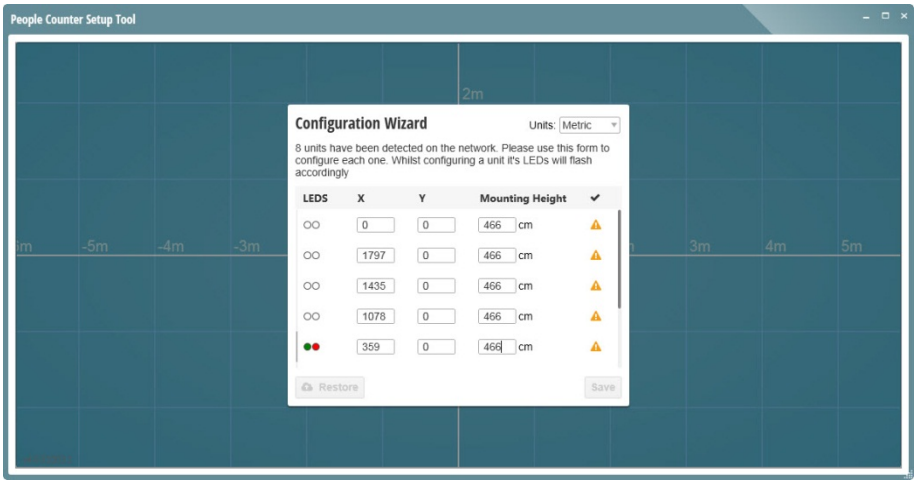


Figure 6.1.16

If you have more than five units simply use the scroll bar on the right of the dialog to show the ones from off the bottom of the screen.

Continue entering all the details until they're all filled in. Make sure that each unit has its own unique X, Y and height information and that none have been accidentally repeated.

Once all the units have valid X, Y and Mounting Height values, the 'Save' button will now be selectable:

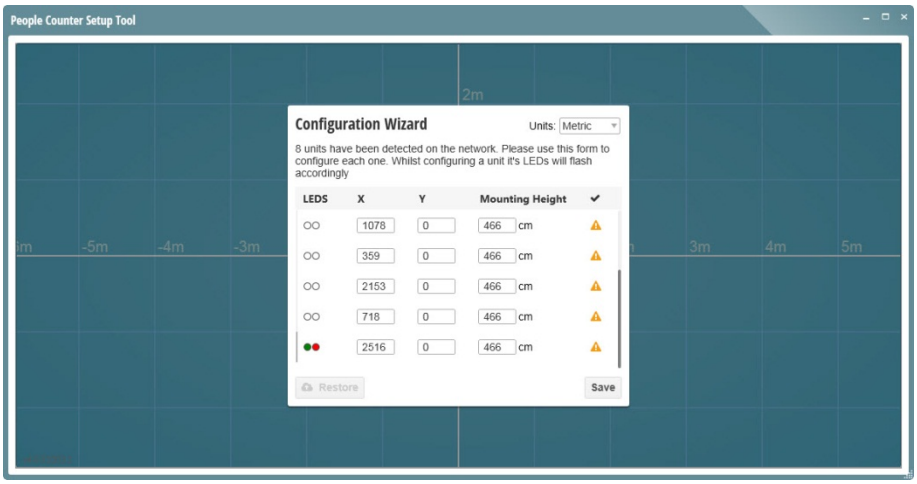


Figure 6.1.17

When you click the ‘Save’ button all of the positioning information entered will be set in the counters, and the ground plane view will then be shown:

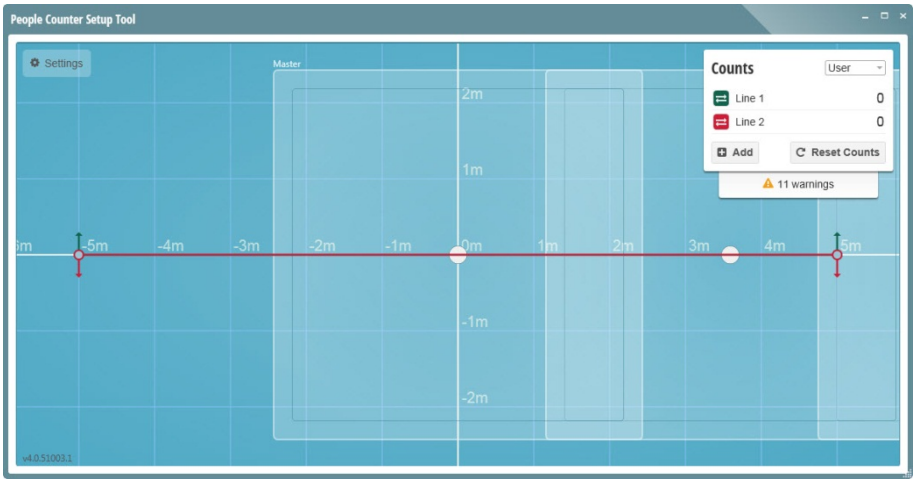


Figure 6.1.18

In this case there are a lot of counters in a line which are not all shown be default, but by clicking and dragging the ground plane background it can be moved around.

The view can also be zoomed out in order to show all the units by using the mouse ‘scroll wheel’ (see section 6.3 for more details of the ground plane view). Some laptops can also use the side of the track pad for zoom control:

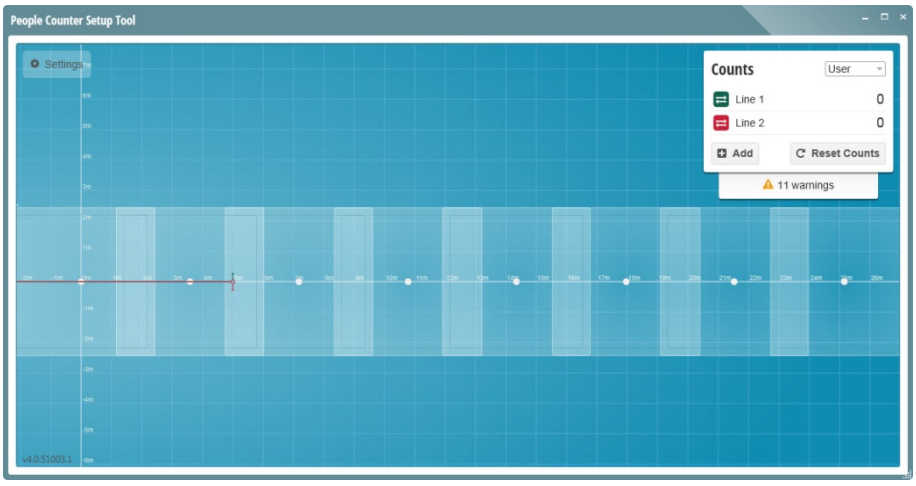


Figure 6.1.19

To confirm that all units have been given the correct positioning information you should walk across all the counters' field of views (from right to left in this example) and check that the target is correctly tracked all the way through:

Figure 6.1.20

If when walking between views from left to right, or vice versa, check for consistent tracking of a single target. Watch for:

- Target being lost, even if only very briefly
- Target disappearing from one counter's field of view and re-appearing on a different counter's field of view
- Target moving in different directions across any of the counter's field of views

If any of the above issues are seen, check:

- Units have correct X, Y and height information (never guess or estimate values)
- Units are all installed level
- Units have the correct X and Y positions and none have been entered on wrong units
- Units are all positioned 'pointing' in the same direction. Units should all be positioned with their directional arrows (on the mounting base) pointing in the same direction (usually into the area of interest – see Irisys Installer training docs for more details) with none accidentally positioned 180° the wrong way around.

Fragmented tracking of individual targets between counter views is always because overlaps are not where the network thinks they should be. Always enter X, Y and height information as accurately as possible and check bases are correctly aligned and are all level – check with a spirit level if possible.

6.2 Configuring Disjointed Wide Openings

The Gazelle series counters (and 3000 series before them) allow for disjointed wide openings, which make use of the master and node units, and associated cabling, but which aren't necessarily installed next to each other in a standard overlapping wide opening configuration.

This might be appropriate in certain circumstances in order to minimise cable runs, reduce the number of required network ports, or to allow counts from multiple doors to be retrieved from only one master unit, for example.

Configuring the X and Y settings for non-overlapping units is clearly not as important in these cases simply because target tracking between units is not required.

When configuring the X and Y values on units which are connected together as a wide opening network, but which do not overlap with each other, you can use the actual values, and in some cases the units may actually be close enough to track targets between them and only by configuring the actual distances will you be able to see this.

If however, units are very far away from each other and entering the actual distances between units makes it awkward to view all (or some) units on screen at the same time, you can enter values which effectively position the units a lot closer together purely for easier viewing. You must remember to leave a sufficient gap between units to prevent any false tracking of completely separate targets between views. As an example, if two units have been installed with a 20m distance between them, entering appropriate X and Y values to maintain that 20m gap on screen will make it difficult or clumsy to see both units at once. You would need to fully zoom out (using the mouse scroll wheel) and would then not be able to see with very much detail, or you would need to keep moving the ground plane left and right in order to 'swap' between the two units. But if you can enter X and Y values which maintain a 5 or 10m gap, you will then be able to see the two units on screen at the same time, at a decent resolution, whilst preventing two independent targets on each counters field of view from mistakenly 'interacting' with each other and producing tracking errors.

6.3 The Main ‘Ground Plane’ View

The ground plane view is simpler than in previous versions of PCST.

Here we have one counter. Note that the two count lines are positioned directly on top of each over by default:

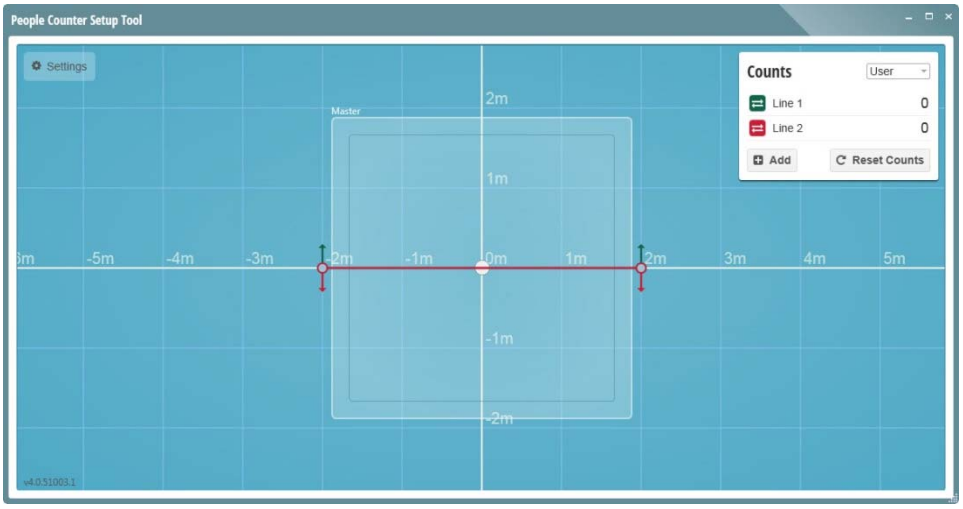


Figure 6.3.1

If the counter is warmed up and people are walking underneath it, you will see corresponding targets indicating their position on the ground plane view:

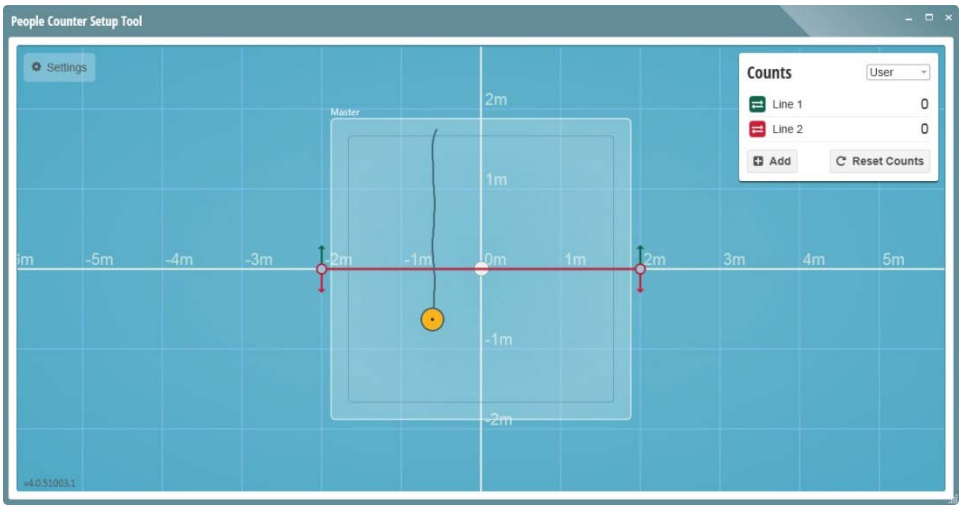


Figure 6.3.2

But before the counter is counting accurately, a number of settings must be made. See following sections for details.

> Remember: The counter requires a certain amount of settling time after power on to adjust to its installed environment. If the counter has not yet settled you will see an animation in place of the field of view, see section 6.4.

The Ground Plane in Detail

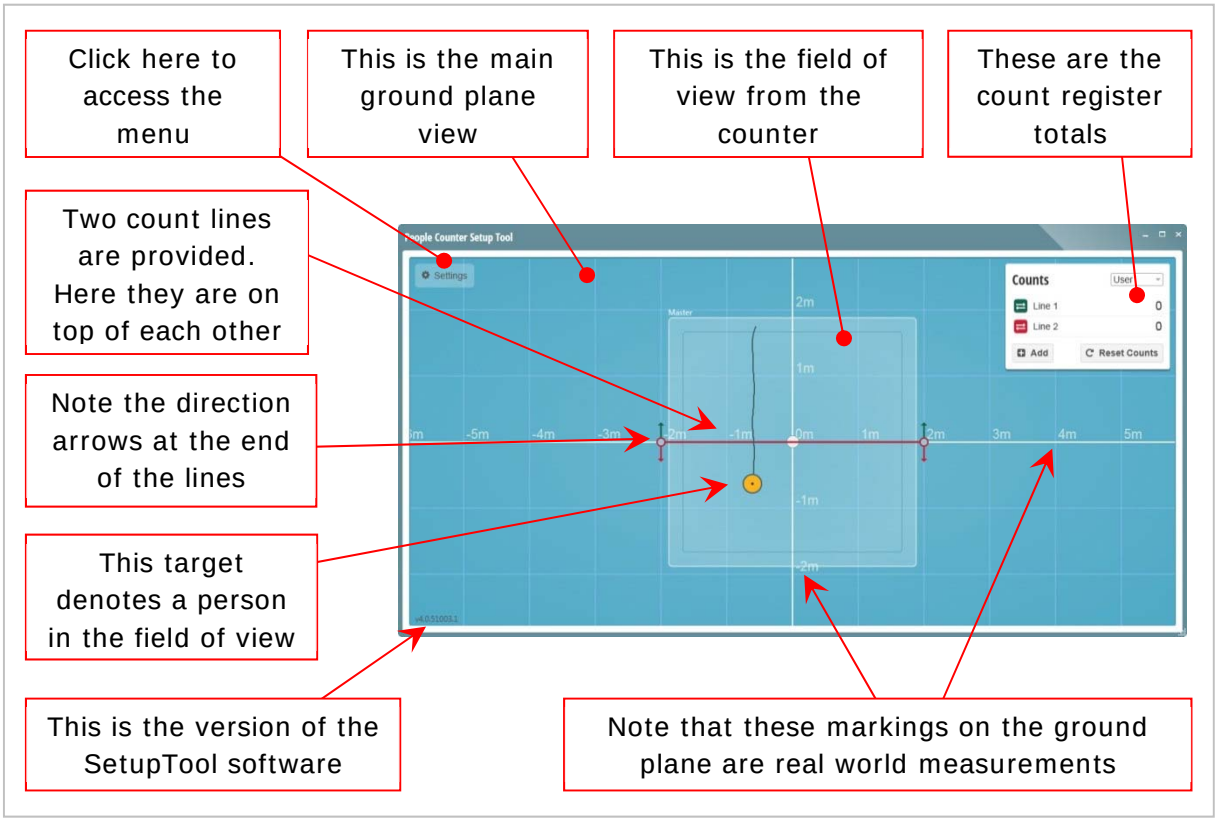


Figure 6.3.3

See ‘Appendix C Firmware Versions’ for details of different web Setup Tools that are available.

The ground plane view can be panned by clicking and dragging the ground plane ‘background’ (i.e. click anywhere but the counter’s field of view within the background). It can also be zoomed in and out as required, by using the mouse scroll wheel.

6.4 Settling Time

An adequate settling time should be allowed after applying power to the counter to allow it to adjust to its installed environment. The two LEDs on the front of the counter will flash alternately until the counter has stabilised and is fully operational. Typical settling time is between 45 seconds and 2 minutes, dependant on the temperature difference between where the counter has been stored and where it is installed. For example, if a counter is installed shortly after being moved from a cold place then it will take approx. 2 minutes, but if the counter is merely rebooted then it will take much less time.

If the counter is still settling when you connect to it, you will still be able to configure all settings, but configuration of the main counter functionality, which requires the viewing of the targets moving about, will be a little restricted until the settling time has elapsed and the counter's field of view is accessible.

When the counter is still 'settling', or 'warming up', an animation will be shown in place of the target view as below:

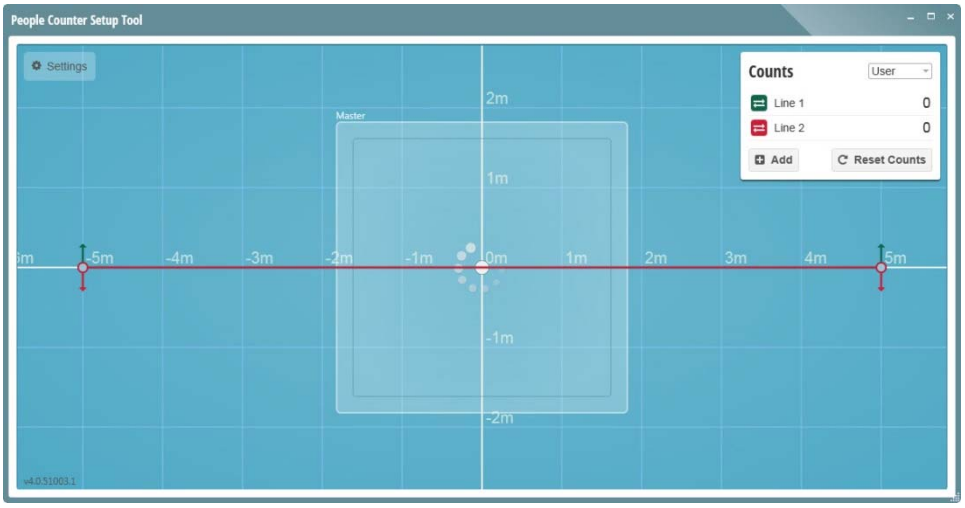


Figure 6.4.1

Remember that sufficient walk testing is essential whilst positioning the counting lines and configuring the counting functionality, therefore you should wait until the counter has finished settling before attempting to configure these elements.

6.5 Individual Unit Settings

To make changes to an individual unit just click the cog symbol in the top left of the counters field of view:

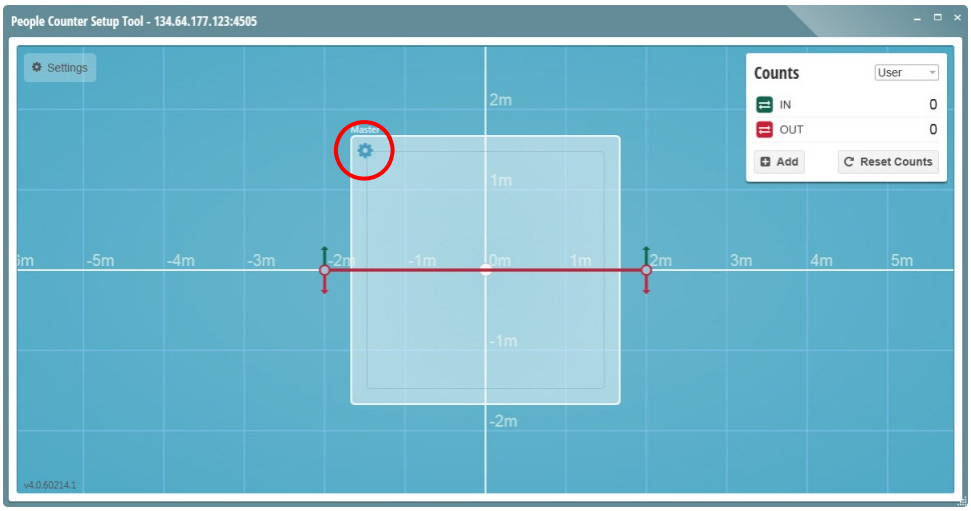


Figure 6.5.1

You will then be able to change the counters height, and X and Y, settings as required:

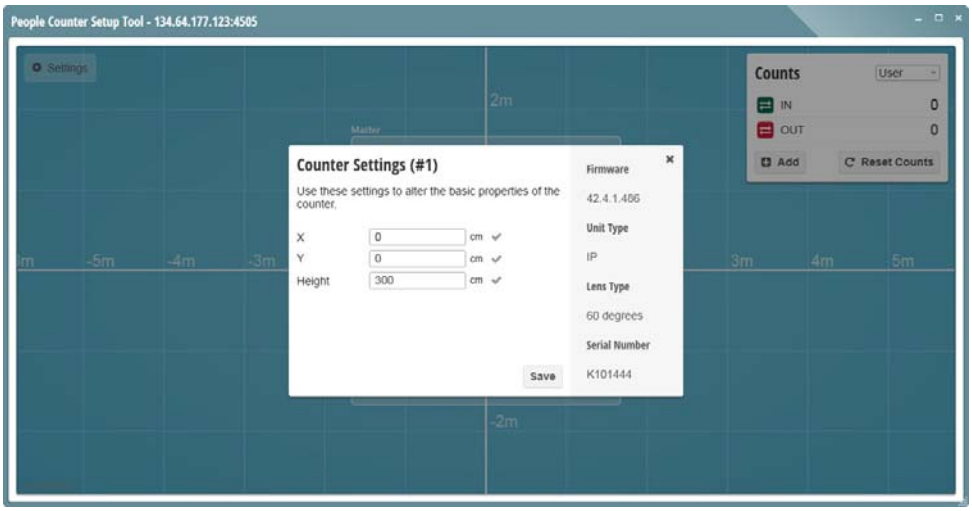


Figure 6.5.2

You can also see the type of unit, lens fitted and firmware version in this window. Serial number information is required by Irisys support in the case of any warranty claims:

Figure 6.5.3

On relay units the master/node assignment can also be changed here - see next section.

6.5.1 Changing Relay Master / Node Assignment

The position of the master unit is always shown on the ground plane view:

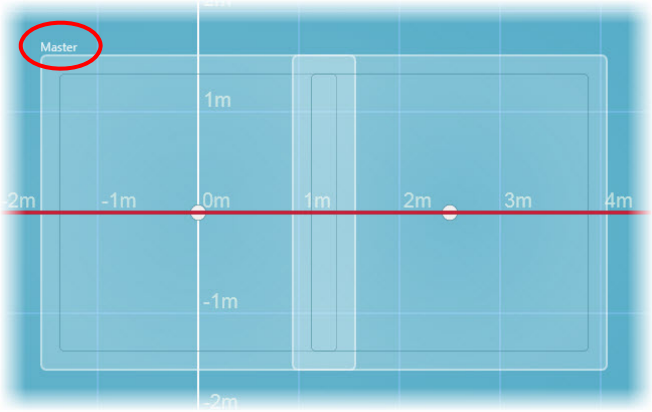


Figure 6.5.4

On 3000 series relay units this can be changed in software and it is essential that the correct unit is set to be the master, as only the master will output pulses on its relays. Note that on Gazelle series relay only units you must order specific master or node hardware so this step is not necessary.

If you need to change the master/node assignment of a wide opening network of 3000 series relay-only units, simply click on the currently assigned node unit, that you want to become the master, and access its individual settings:

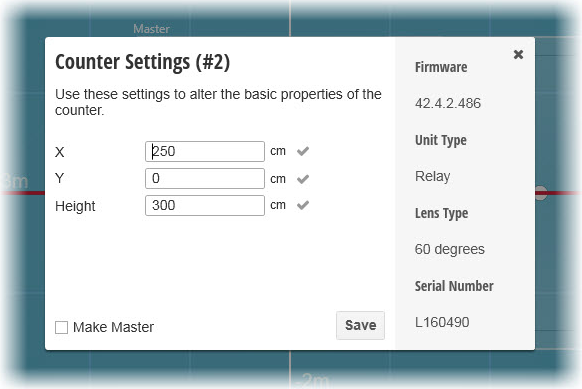


Figure 6.5.5

Now place a tick in the ‘Make Master’ checkbox and ‘Save’ the settings:

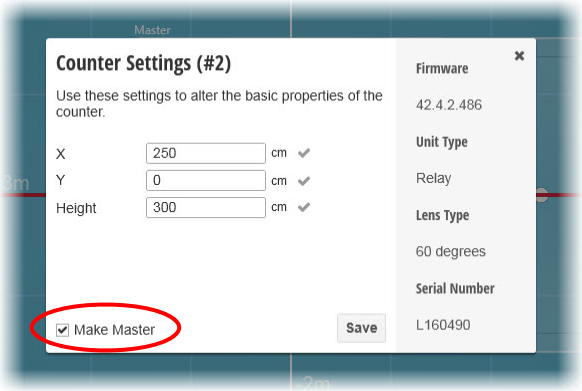


Figure 6.5.6

After a few seconds the new master assignment will be shown:

Figure 6.5.7

Remember that only 3000 series relay units can be have their master/node assignment changed in this way. All gazelle series units (and 3000 series IP only units) must be ordered as the required hardware variant.

6.6 Counts Dialog

The Counts dialog window shows the current values logged against each enabled register. When first connected to a counter the ‘User’ counts are shown. These start at zero at first connection and will increment as people are counted:

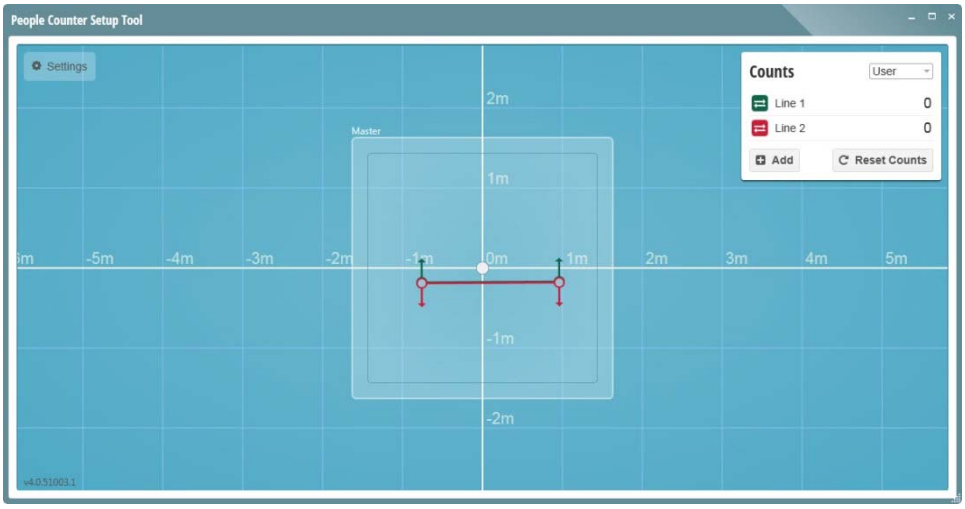


Figure 6.6.1

But by choosing the ‘System’ counts from the drop down menu, the underlying values since the counter was last reset will be shown:

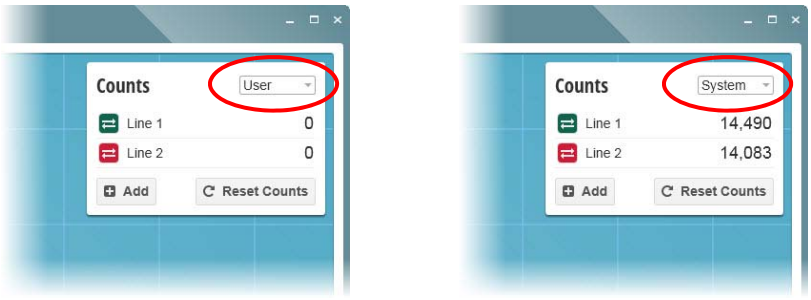


Figure 6.6.2

Both the User and System counts are incremented concurrently & identically when people are counted. Only the view is switched via the dropdown menu.

You can rename or delete a register by hovering the mouse cursor over one of the registers and then clicking the appropriate icon:

Figure 6.6.3

6.6.1 Reset Counts

Count totals are stored in the counter's internal memory and will not be lost while the counter is still powered. If you want to reset the counts to zero, the 'Reset Counts' option should be used.

When the User counts are being displayed, clicking the 'Reset Counts' button will do just that; all displayed registers will be reset to a zero value and begin counting from that point:

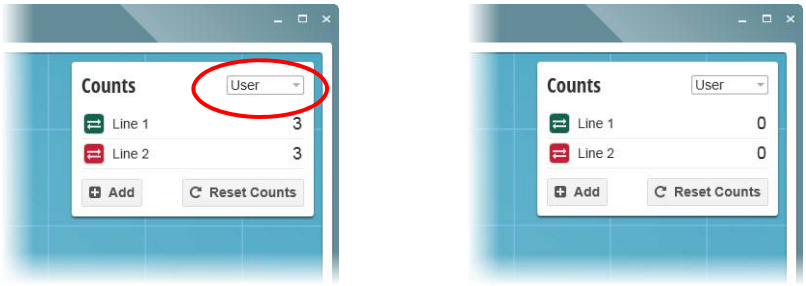


Figure 6.6.4

Resetting the User Counts will not affect the system count values.

> Because resetting the User Counts does not reset the System Counts, you are free to do as much walk testing as you want and reset the counts whenever you want to start again at zero for the next walk test.

Because the System counts are used for the logging functionality; if you reset these, then future logged values will be affected. Predominantly, resetting the System counts will mean that the next logged values into flash will be lower than the preceding ones, possibly by many thousands dependant on how long the counter had been counting for before being reset. Additionally, resetting the System Counts will mean that any count increments added to the System Count registers since the last log entry, will not be written to a log entry in flash and so will be lost.

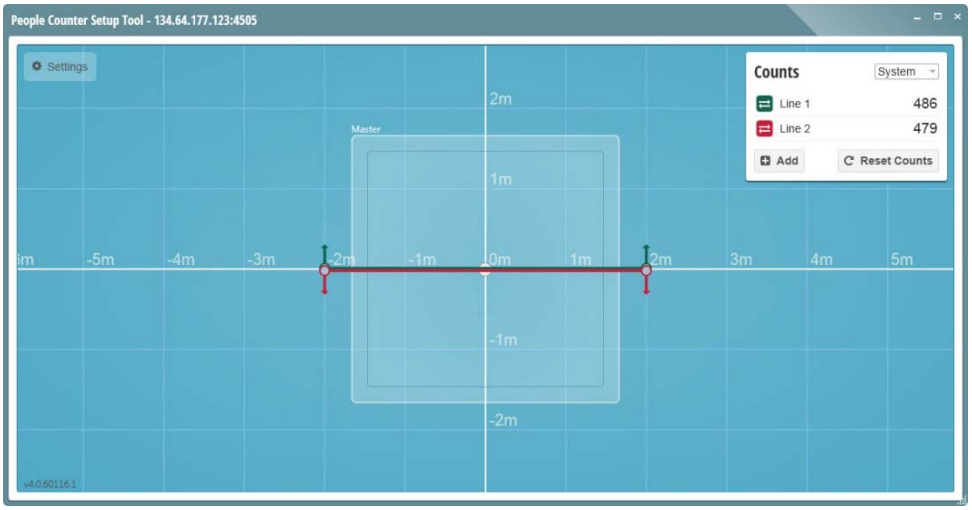


Figure 6.6.5

Because of the possibility of losing data when resetting the System Counts, you must acknowledge the resetting first:

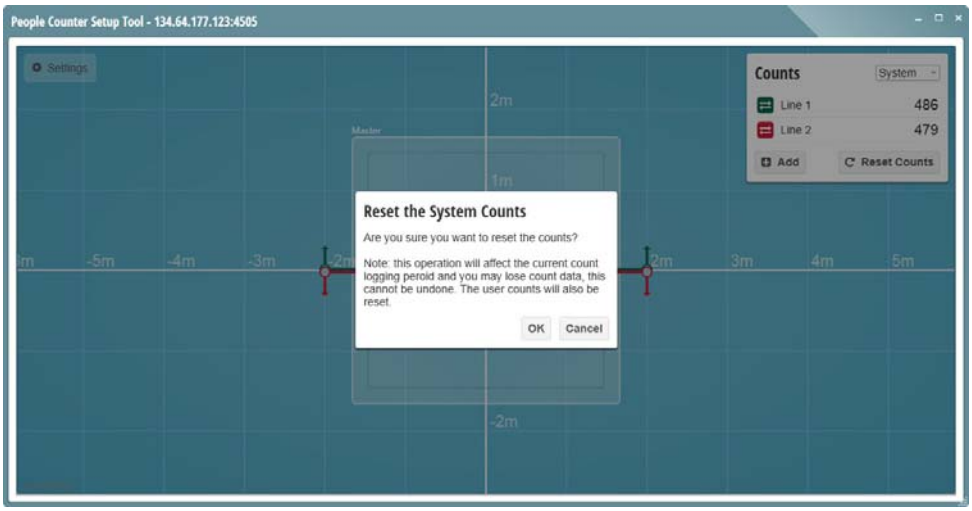


Figure 6.6.6

By clicking ‘OK’ the system counts will be reset to zero:

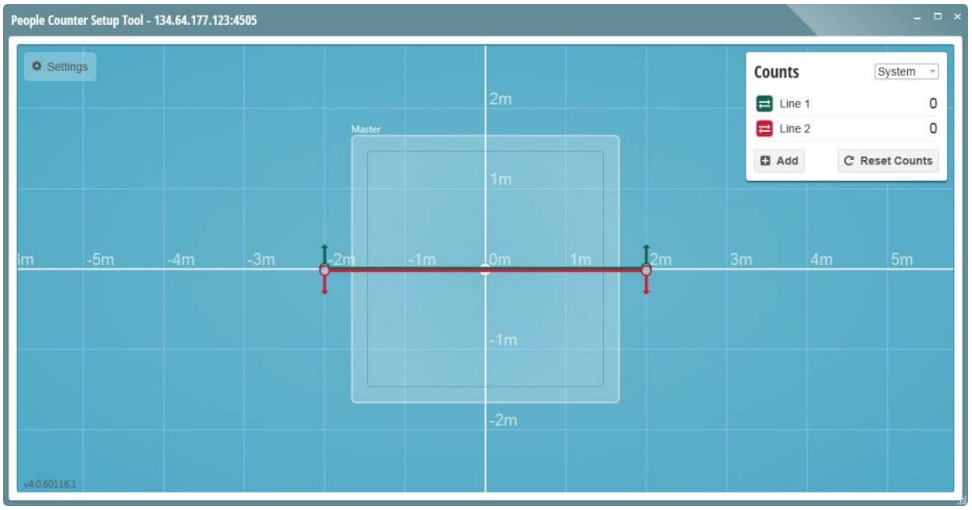


Figure 6.6.7

Note that clicking the ‘OK’ button will then reset the System counts but also the User Counts too:

Resetting the System or User counts via the ‘Reset Counts’ button will not erase or otherwise affect any stored log entries. However, resetting the System Counts will mean that subsequent log entries will be lower.

Remember: Counts will also be reset to zero if a unit is powered down or cleared using the API function ‘ResetCurrentCounts()’.

6.7 Warnings

Any warnings will be shown underneath the Counts dialog box:

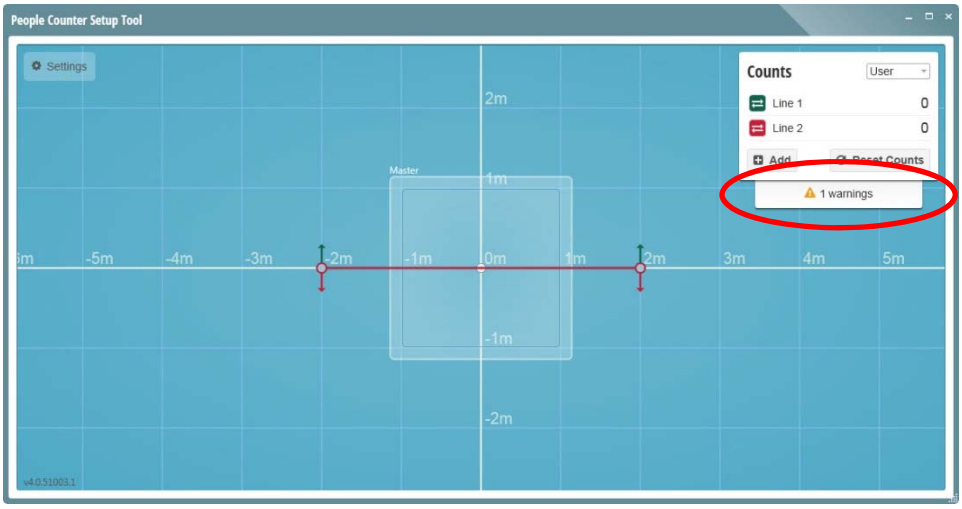


Figure 6.7.1

Left click the warning message to see details of any warnings:

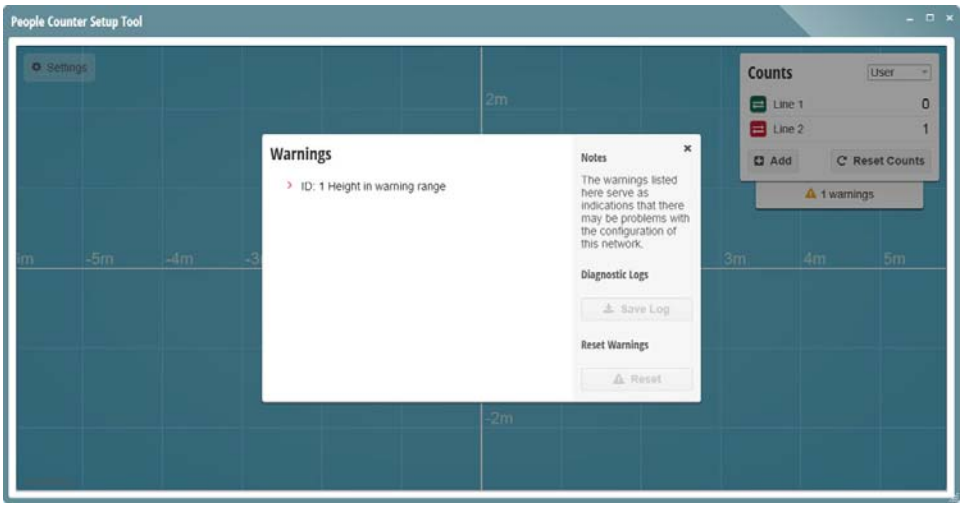


Figure 6.7.2

When available, clicking the ‘Save Log’ button allows the error log to be saved to a file. This can then be emailed to Irisys whenever technical support is required.

These details may be required to provide technical support. Always have these error messages to hand when contacting Irisys for technical support.

6.8 Positioning the Count Lines

Correct count line configuration is the key to accurate counting. Count lines should be positioned across the area where people will be walking, and usually in an arc shape around a door of interest. Positioning the lines is done using the mouse in an intuitive drag and drop style. The different methods of positioning and shaping the lines are detailed below:

- Moving a Whole Line.

If you move your mouse pointer onto the straight part of the line, you can then left click on the line and, with the mouse button still depressed, you can move the line around. Release the mouse button to drop the line in position.

- Using Drag Points to Manipulate the Count Lines.

The purple points on the ends of the lines are called drag points. If you move your mouse pointer on to a drag point, you can left click the drag point, and, with the mouse button still depressed, you can move the end of the line around. Release the mouse button to drop the drag point in position.

- Creating Extra Drag Points

The smaller points in the middle of the lines can be turned into drag points too, for when you want to shape the lines around an obstacle or in order to ensure people cross the lines no matter which direction they are travelling. To create an extra drag point simply click on the small point and it will turn into a drag point which can then be positioned as detailed above.

- Shaping The Count Lines Using Extra Drag Points

By creating extra drag points along the length of a line, it is possible to deform and manipulate the lines for any installation requirement:

You can have up to 16 drag points on each count line (one at both end, and fourteen in-between) creating fifteen linked line sections. Each count line will still function as one complete count line, but now, all sorts of configurations become possible. This means that the way people move into and out of a scene can be assessed and the count lines can be configured to accommodate the traffic movement to provide the highest count accuracy.

- Deleting Drag Points

To delete a drag point, just click the mouse pointer on the drag point that you want to delete whilst holding down the CTRL key on your keyboard.

By careful and clever use of count line configurations, many counting options become possible.

Correct count line configuration is the key to accurate counting. Always configure the count lines as per the Irisys Installer Training, available from the Irisys partner portal.

Remember that the count lines configured in isolation will not produce accurate counting. Always configure the correct count mode for each line as well.

In most cases it is preferable, and advisable, to place the two count lines on top of each other, in the same position. By doing this, the effect of any dithering behaviour will be reduced. This can also help where other issues are causing IN/OUT data inconsistencies, for example with cross traffic and people stopping in the field of view.

6.8.1 Count Lines Positioning Guidelines

During the count line positioning part of the counter configuration, lots of walk testing should be performed in order to assess the best place for each line. Pay particular attention to the initialisation of targets (where targets are first shown on the field of view when a person enters it) and position lines well ahead of this position to ensure that everyone will be initialised and then tracked over the line. Remember that people who are initialised after the line will not be counted! It is recommended that the 'Path map' view is enabled to help with this as the path map view will show all areas of initialisation, see section 6.18.2 for more details.

Corridors

For simple counting along corridors, two lines should be positioned across the field of view so that they intersect the middle. These should be placed on top of each other, with one counting in one direction and the other 'flipped' so that it counts the other direction. This provides lots of target initialisation space for both directions:

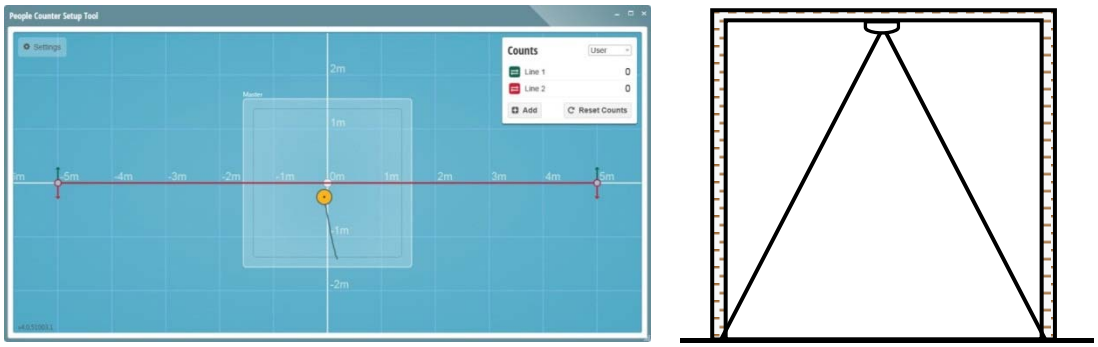


Figure 6.8.1

If the field of view size is wider that the width of the corridor then the line ends should be moved in from the edges so that they are the same width as the corridor, in order to avoid counting any reflected targets which may be present:

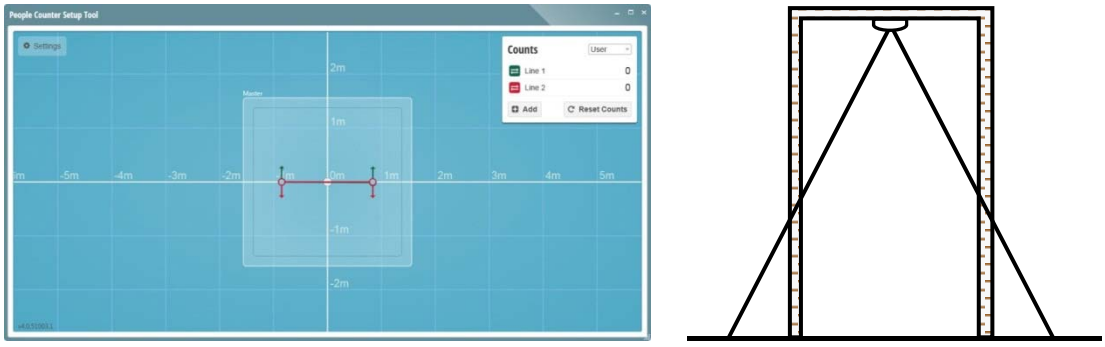


Figure 6.8.2

Door Counting

When counting at doors, it is usually recommended that count lines are positioned in a U-shape around the doors in order to provide enough target initialisation space and track people who enter and go left, right or straight on. In all cases the movement of the door should be evaluated and the lines positioned well out of the way (doors would be at the bottom of the field of view in this example):

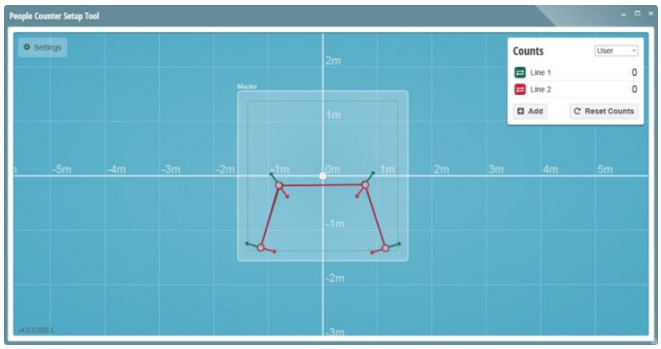


Figure 6.8.3

If the lines need to be positioned quite far into the field of view, to avoid the swing of a door for example, and you are worried about people being counted as they just walk past the door then remember that you should also configure the correct count mode for each line so that cross traffic is not counted, see section 6.10.1 for details on count mode configuration.

General Counting Line Positioning tips

- Remember that each count line is independent
- Remember that each line is directional (indicated by the directional arrows on the line, see section 6.9 for how to ‘flip’ a count line direction)
- Remember that each count line has is own the count mode setting (see section 6.10.1 for details of the different count modes available)
- In most cases IN and OUT count lines should be placed on top of each other in the same place with only the line direction different
- Keep lines away from other moving objects, for example (and most importantly) keep lines away from moving doors
- Ensure lines fully encompass the area where people can walk – make sure it is not possible for people to go around the ends of any lines and not be counted
- In most cases, lines should normally be positioned intersecting the middle of the field of view for best target differentiation

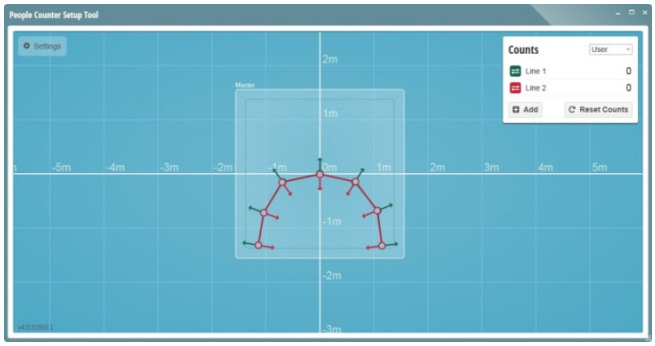


Figure 6.8.4

6.8.2 Multiple Count Lines

By default a master counter will have two count lines enabled, and each will be feeding in to its own count register, but a counter can support up to 16 count lines feeding into up to 32 registers if required.

The values of any register shown in the counts dialog can be used to retrieve count data via the network API functions in the case of an IP enabled counter, and/or can be assigned to relay outputs in the case of a relay enabled counter.

In order to provide more than two (IN and OUT) directions for counting, you can add more count registers and assign other lines to them.

To add more count lines you must click the '+ Add' button on the 'Counts' dialog, you will then be able to choose the 'Basic counting line' register type:

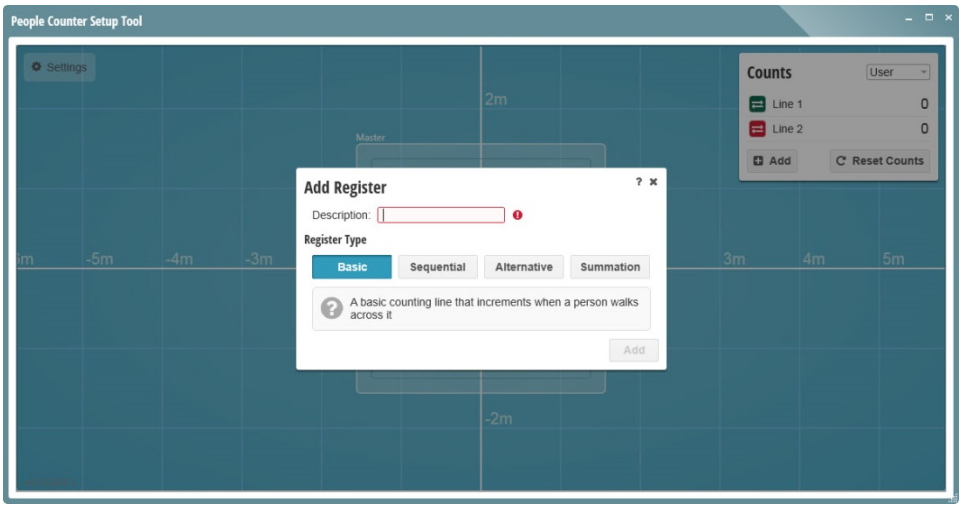


Figure 6.8.5

Adding a basic register will also add the required, corresponding, count line automatically. Just enter a description of the Register, ensure that the 'Basic' type is highlighted and click the 'Add' button. A new line and register will then be shown:

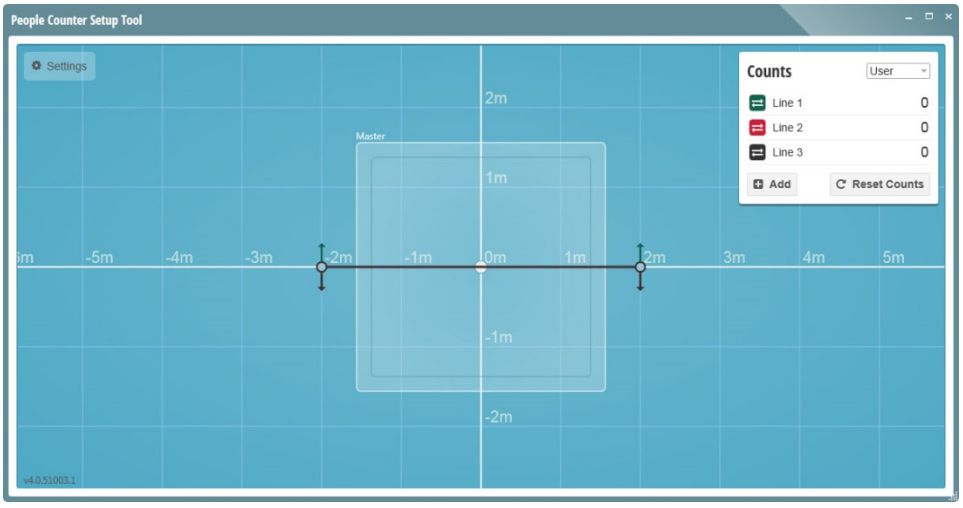


Figure 6.8.6

Once the required lines are added, all that is left to do is move and position them as necessary and set the correct count mode.

On wide opening networks covering multiple physical doors you could position two count lines across all doors in order to provide one set of IN and OUT counts:

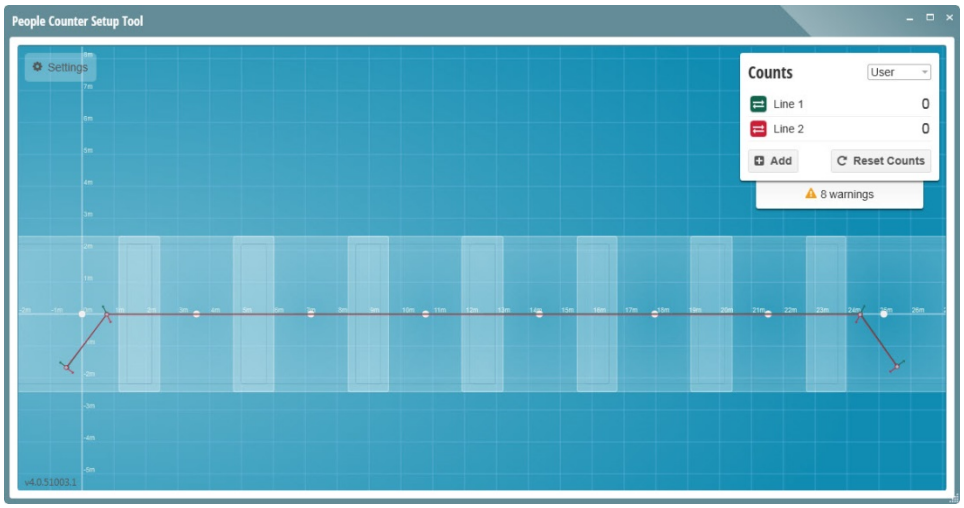


Figure 6.8.7

Or, you could position multiple IN and OUT lines in order to count at each door separately:

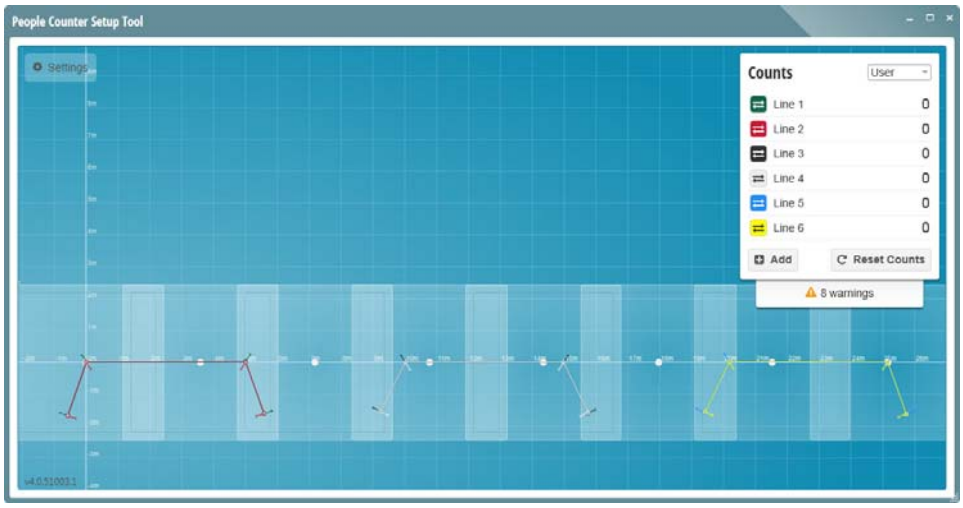


Figure 6.8.8

6.9 Count Line Right Click Menu

By hovering the mouse cursor over a count line, a “tooltip” will be displayed showing the name of the line. If the line has a register associated with it then this will be the same name as shown in the Counts dialog window:

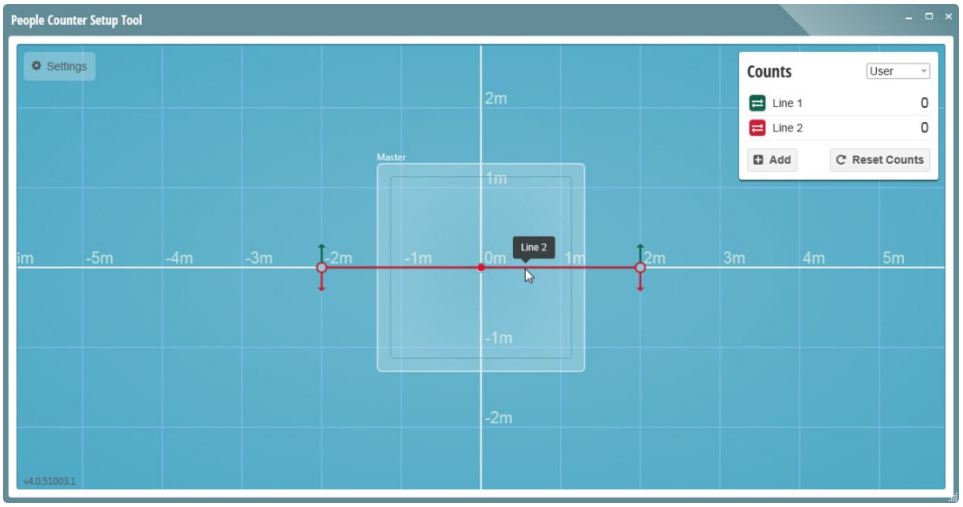


Figure 6.9.1

If you now click the right mouse button whilst hovering over a count line, a menu will appear which will allow you to make changes to that count line:

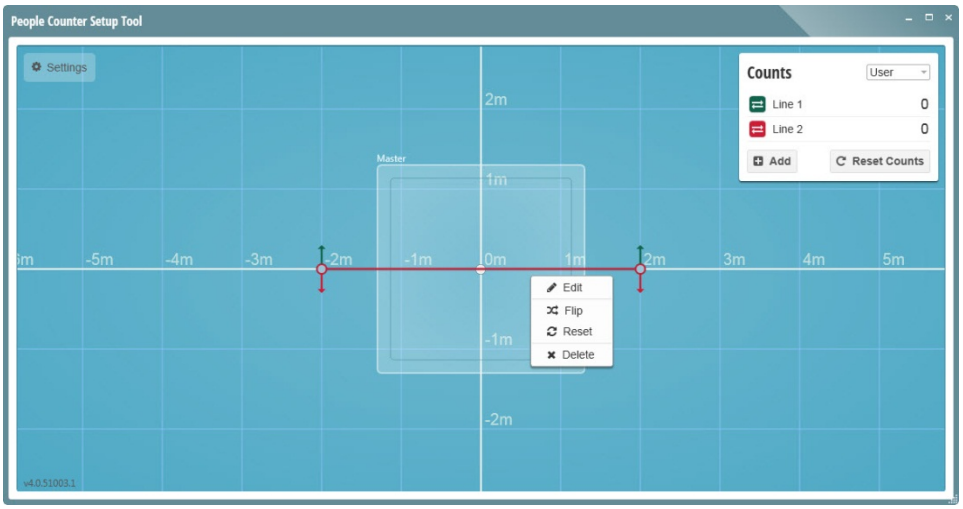


Figure 6.9.2

Selecting the ‘Edit’ option allows configuration of the line label and count mode. Setting the correct count mode for each count line is an essential part of counter configuration.

Selecting the ‘Flip’ option will change the direction that a person must cross that line in order to generate a count increment, as indicated by the arrows on the end of the line.

Selecting the ‘Reset’ option will reduce the line back to a straight line with only two (end) drag point. This is useful if many drag points have been added and they all need to be deleted.

Selecting the ‘Delete’ option will remove that line and an associated register if one exists.

6.10 Count Line Settings

By right clicking on a line and choosing the ‘Edit’ option you are able to make various changes to that line:

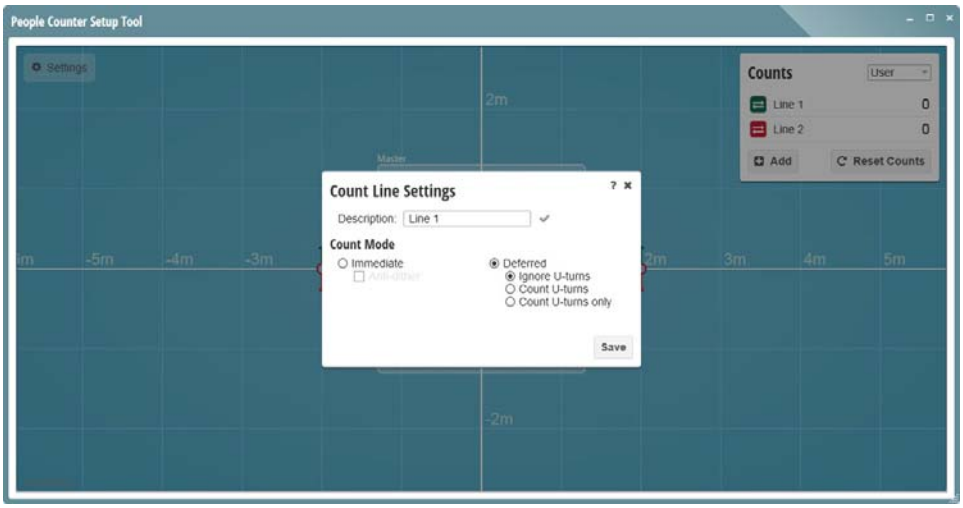


Figure 6.10.1

If a count line is associated with a count register, the line ‘Description’ will be shown in the Counts dialog window. This description will also be available remotely via the API function calls for use in your own software.

> It is recommended that a relevant and meaningful, but simple, count line description is utilised in order to ensure that count data is placed correctly in the database and for ease of understanding during return visits in the future possibly by different engineers from the installer. Examples: ‘IN’, ‘OUT’, etc.

6.10.1 Count Modes

There are two main counting modes, ‘Immediate’ and ‘Deferred’, each with sub-options, which can be enabled as required. Altogether there are a total of five, different, count modes.

Essentially, when configured to use ‘Immediate’ count mode, a line increment is registered immediately when a person crosses that line, but with ‘Deferred’ count mode any increment is only given once the person leaves the field of view as well.

In most cases, the default count mode (Deferred) will be the optimum mode as in this mode any unusual movement by a person, which could normally result in multiple line crossings, can be considered and then only the relevant increments given.

In some cases, it may be necessary to change the count mode. This will depend on:

- the installed environment and how people walk through it
- your chosen count line settings
- what you want to count
- what you don’t want to count

Additionally some of the advanced count line logic functions require count lines to be configured in immediate count mode.

Some of the count modes treat specific walking patterns differently and it is up to you to decide whether a certain trajectory through the field of view, and over the count line(s), should be counted or not, by selecting the appropriate count mode.

Careful placement and setup of the count lines is required in conjunction with selecting the appropriate count mode. Some count line/count mode combinations will result in poor count accuracy in some cases, dependant on walking patterns and your own established, and accepted, count parameters, see below for more details.

We recommend configuring the line positions first before setting the count mode. Remember to always perform lots of walk testing to ensure the line and mode is correct for your application.

Immediate Count Mode

- The first count increment is given at the time the person crosses the count line (in the configured direction)
- With the 'Anti-dither' sub-option enabled – only the first crossing is counted
- But with 'Anti-dither' Disabled – all subsequent line crossings are counted

Deferred Count Mode

- Count increments are only given when the target leaves the field of view
- Each target can only be counted a maximum of once per count line
- The sub Count U-Turns option affects how targets which cross both lines are counted
  - Ignore U-Turns
    - As its name suggests will not count people who walk across a line but then 'U-turn' and go back across it in the other direction
  - Count U-Turns
    - Again, as the name suggests, will count people who do 'U-turns'
  - Count U-Turns Only
    - In this mode, only people who perform U-turns will be counted; people who walk through normally are not counted.

In most cases the 'Deferred' count mode with 'Ignore U-Turns' is the recommended count mode.

Note: A target is deemed to have left the field of view if it physically leaves the field of view by walking out, or if the counter loses the target, for example if that person stops and stands still for a long enough time.

Note: the counting modes rely on being able to consistently track a person through the field of view. If a person stops long enough to be lost from view then it is possible that all modes will count that person once they are seen again and cross a count line.

6.11 Counter “Settings” Menu

The main menu is accessed by clicking the ‘Settings’ button in the top left hand corner of the screen. The available options will then be shown:

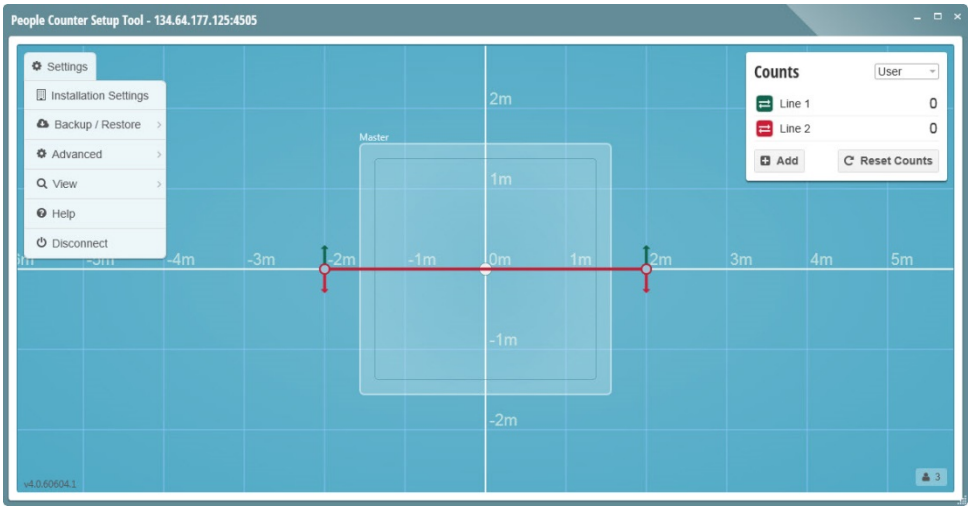


Figure 6.11.1

6.12 Installation Settings

The installation settings are those that relate to the physical location of the installation. You are free to populate these edit fields as you wish, but it is recommended that these settings are not left as default, regardless of whether they are actually made use of in your organisation.

The installation settings can be used to identify the counters much more easily in the future, for example:

- For use when configuring remotely
- For use with Validation Tool
- For use in Estate Manager
- For use in Harvester
- For use in Connection Router
- When requiring engineer visits/maintenance/audits
- When backing up/restoring settings to units

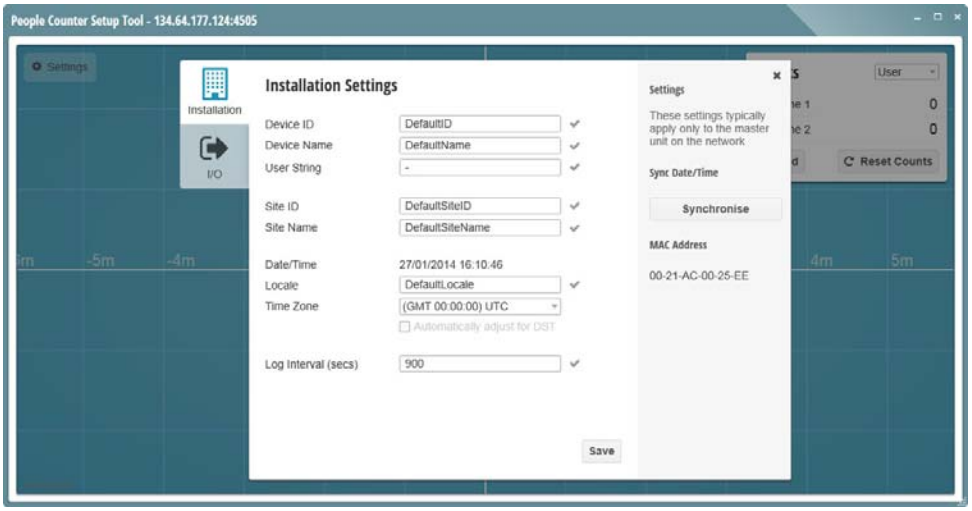


Figure 6.12.1

It is recommended that all individual counters installed at the same site have the same Site name and Site ID details with the Device name and Device ID being the significant values for locating counters on that site.

When collecting data through the Irisys Harvester data collection software, the correct configuration of the Installation settings for each counter is vital. See separate document 'Harvester Installation and User guide' for more information.

When using the Client Connect feature of the counters to connect into the Irisys Estate Manager application, the Installation Settings can be used to automatically assign counters into groups within Estate Manager.

Remember also that the correct date and time settings should be set here. The IP enabled counters have a battery backed up time and date function, which is used for count log entry time stamping. These time-stamped entries can then be retrieved at a

later date. Choose the correct time zone where the counter is physically located in the world and then click the 'Synchronise' button to sync the date and time. The date and time displayed in this window is based on your PCs timezone setting, but the time itself is always stored in UTC format within the counter.

Although relay enabled counters can also store the current date and time, there is no battery backup to the date and time if ever power fails, and it is not used internally by the counter anyway, so therefore, setting the data and time on a relay-only counter is usually not necessary.

The date and time setting is required for time stamped count logging on IP enabled counters. It is therefore very important that the correct date and time is entered on these units.

The time setting is stored in the counter as a UTC value (Coordinated Universal Time) calculated from the Windows time and time zone setting. Therefore, always set the time of the counter to be the time that it is on your computer, regardless of the time zone that the counter may physically be located in. See separate document 'IPU 40281 UTC & Time Zone Management' for more details.

The Local Timezone setting can be retrieved via the API functions for use in own software as required. The drop down list contains all of the default Time zones. If you wish to use your own time zone implementation, use the Locale field instead.

The 'Log Interval' setting relates to storage of data within the counters internal flash memory for retrieval later. The above example shows that the current line register values are saved every 15 minutes (900 seconds). Other common entries are shown below:

Interval (Seconds)	Interval (Minutes)	Notes
60	1 minute	60 logs an hour on the minute
300	5 minutes	12 logs an hour
360	6 minutes	10 logs an hour
600	10 minutes	6 logs an hour
720	12 minutes	5 logs an hour
900	**15 minutes**	**4 logs an hour** (default)
1200	20 minutes	3 logs an hour
1800	30 minutes	2 logs an hour
3600	60 minutes	1 log an hour on the hour

Remember that the counter will continually count people as they walk through the field of view and cross the count lines. Therefore, the total counts will keep incrementing every day and will never reset to zero unless the counter is powered off, or a reset counts command is sent to the counter via the API. This means that the logged counts will also be a constantly increasing number, and in order to calculate the number of people that have been counted in an hour (for example), you must get the count total from one hour and subtract the count total from the previous hour. For more details of the count logging functionality, see the relevant Programming Guide document.

The Log Interval is how often the counter stores the current counts into its built in count log. As the space available for count logging is fixed, a short logging interval will mean that it fills up faster than a longer interval. In most cases this will not be a problem, but if network connection to the unit is ever lost you will have less time to fix the issue and retrieve count data before losing data with a short log interval than with a longer one - the shorter the period the less number of day's counts can be stored.

The Log Interval can also be retrieved and set via the API. See the relevant programming guide document for details. Not available on relay enabled units.

The log intervals listed above, all divide equally into an hour, which means that the log intervals will be the same every hour. For example setting the log interval to 900 seconds (15minutes) means that logs will be stored; on the hour; fifteen minutes past the hour; half past the hour; and quarter to the hour, e.g. 10:00, 10:15, 10:30, 10:45 etc. Although it is possible to enter a log interval value which does not equally divide into the hour, this is not recommended as the log times will be different in each hour and this will make subsequent reporting more difficult.

6.13 Input / Output Settings

The I/O settings dialog is reached by first clicking the Installation option from the main menu and then choosing the I/O tab:

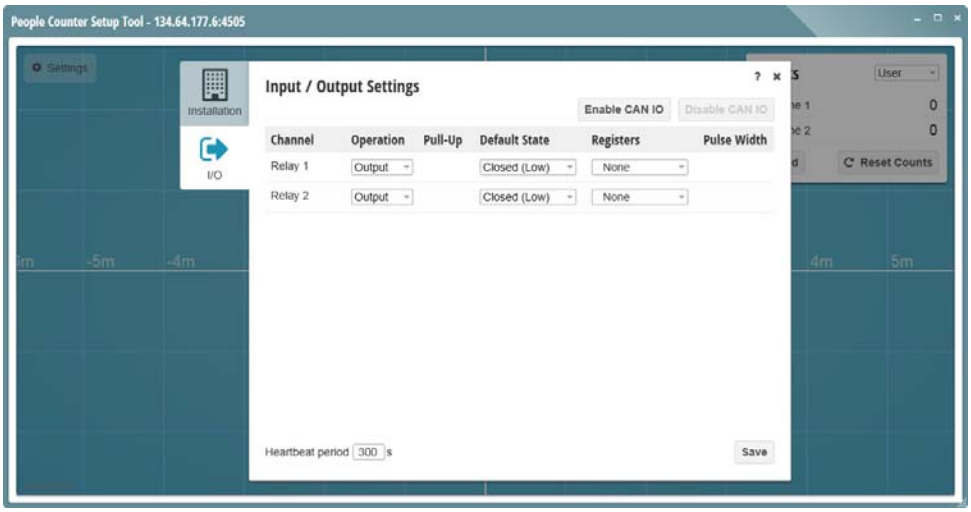


Figure 6.13.1

The relay outputs are another method of extracting count data from a unit and all Irisys relay enabled units will have two on-board relays, as shown above. Using the relay outputs consists of connecting the output pins from the counter to a suitable data logger, and configuring the correct details so that the two work together. It is important to interface the counter to the data logger correctly or this could lead to incorrect or missing data being logged.

On relay output only units (such as the IRC3020), the relays are the only way to extract data from the unit.

Most Gazelle units have both IP and relay outputs and you are free to use either, or both, in order to extract count data from a unit.

On a unit with no on-board relays (such as an IRC3010 or IRC3030) there will be no settings to make here, but you can add a CAN I/O external module if you want to, see section 6.13.2.

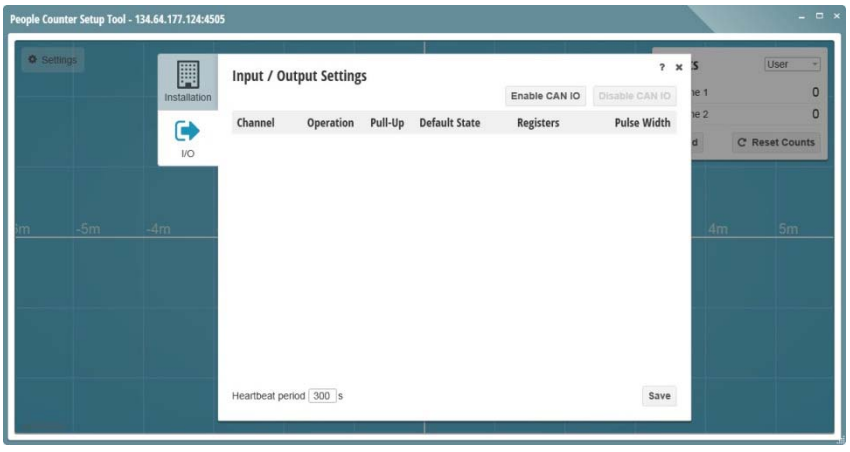


Figure 6.13.2

Various relay configurations are available which mean that the counter can interface with the vast majority of logging equipment available. In most cases, interfacing the counter to a data logger will consist of checking with the logger manufacturer to see what connections and settings are required.

If you are unsure of the required settings, it is important to understand that there are two main types of logger that the relay counter could be connecting to; those with clock based inputs and those with edge detection based inputs, see below.

Clock based inputs

With clock based systems, the logger checks the status of the input every clock pulse.

The main concern with clock based inputs is to ensure that the relay output pulse is not too quick for the logger to see. In general you should check what the clock rate is from the logger manufacturer and ensure that the pulse is sufficient to not fall in between two clock cycles. It should also be long enough so that any interference - which may be picked up on the relay line - can easily be differentiated and not counted.

Normally, there is no maximum length that the pulse width can be, aside from introducing a delay in sending out pulses one after the other in the event of a stream of people being counted one after the other. However, some very basic loggers will expect the signal to go low after a certain number of clock pulses and so care should be taken to avoid such loggers interpreting long pulses as more than one count.

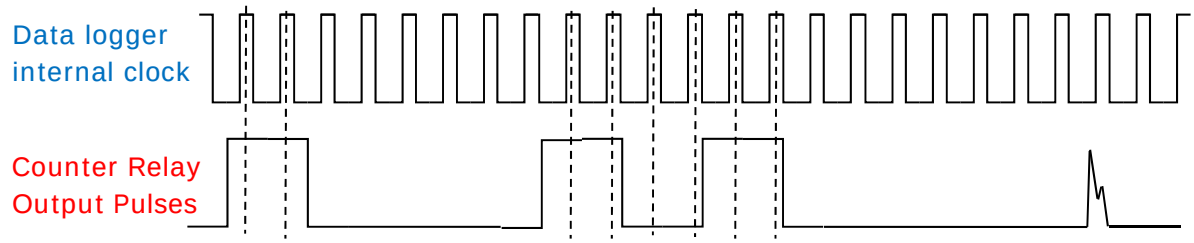


Figure 6.13.3

Edge detection based inputs

With edge detection based systems, the change from a high state to a low state, or vice versa, dependant on configuration, is detected.

With edge detection based data loggers the timing of relay pulses is less critical.

6.13.1 Configuring On-Board Relay Output Settings

On counters with on-board Relay these will be shown in the IO/ section. These can be enabled as outputs or disabled completely if not in use:

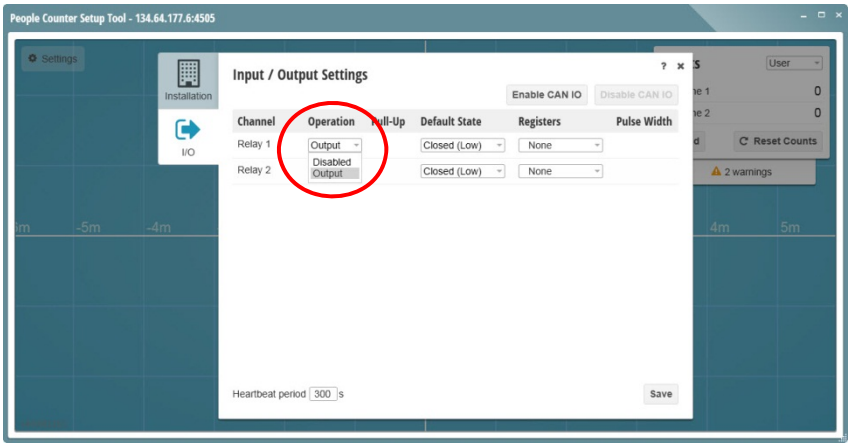


Figure 6.13.4

If enabled, relays need to be configured with a 'Default State' dependant on how you have connected it together:

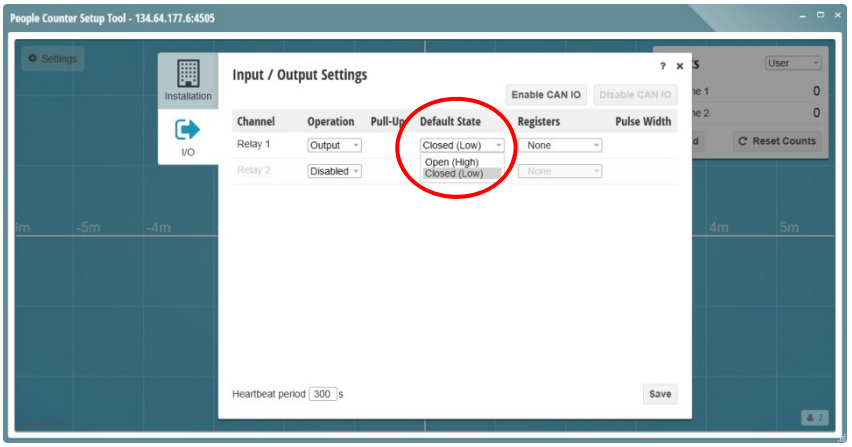


Figure 6.13.5

Next a 'Register' is assigned to the relay from the dropdown list. It is the incrementing of this register that will cause the relay output to pulse:

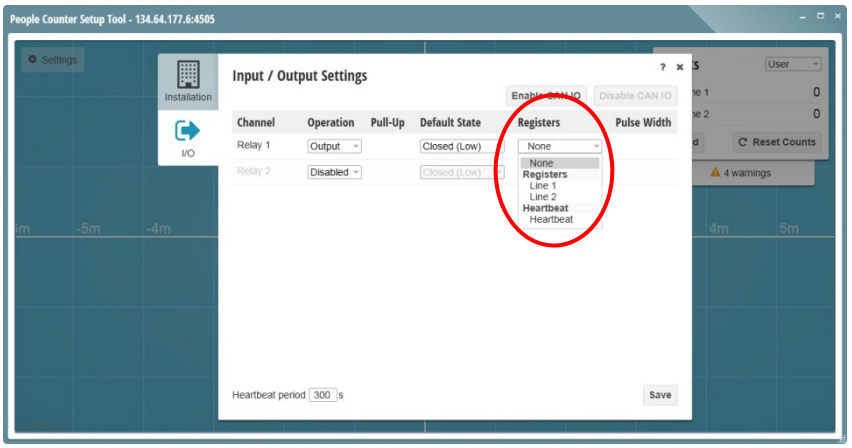


Figure 6.13.6

The last thing to do is then configure how long the pulse will last:

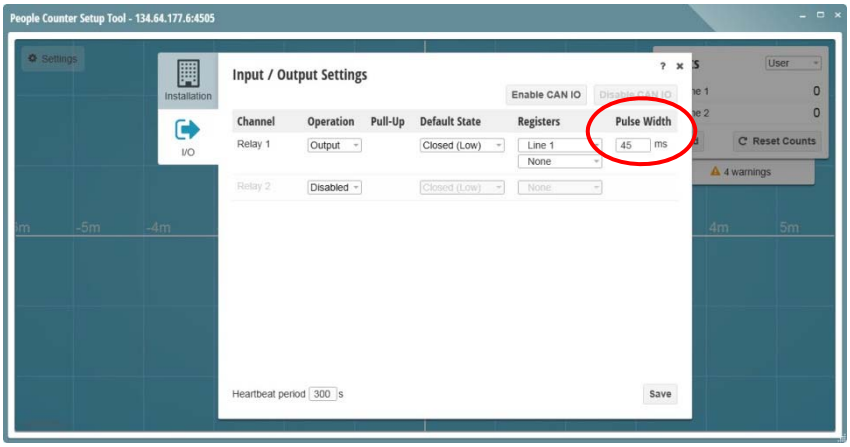


Figure 6.13.7

> Your logging equipment may see an initial state change when the counter powers up if the relays are configured to stay high and go low to indicate a count. In these cases the relay output will go high straight away, which could be interpreted and logged as a valid count increment.

If required, a relay can be configured to output increments from more than one register. This might be required if a data logger only has one input for example. Below, Relay 2 is pulsing for every increment on registers, 'Line 1' and 'Line 2':

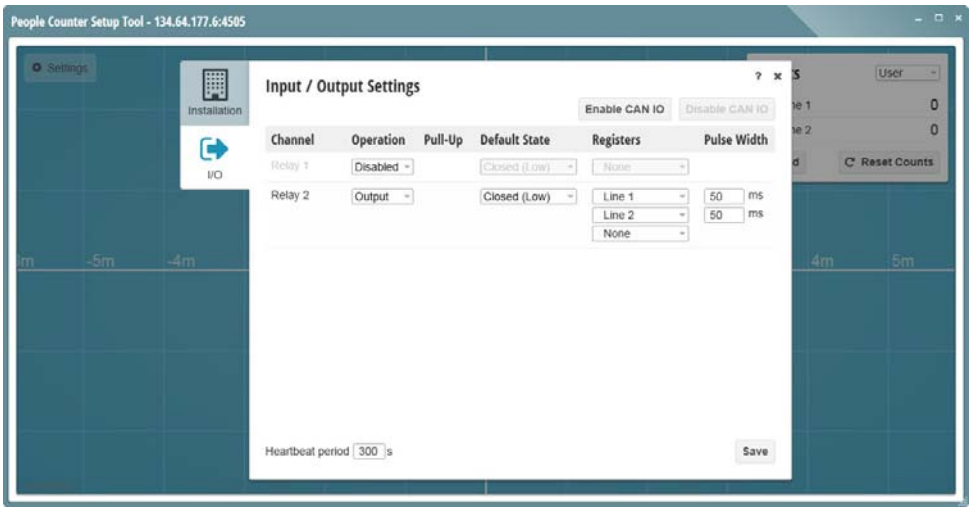


Figure 6.13.8

Note that when multiple Registers are assigned to the same Relay output with the same Pulse Width setting, the data logger will not know which of the registers is incrementing. The data logger will effectively increment a total count value relating to all of the assigned registers.

If you want to be able to differentiate between multiple registers assigned to the same relay output then differing pulse widths can be used:

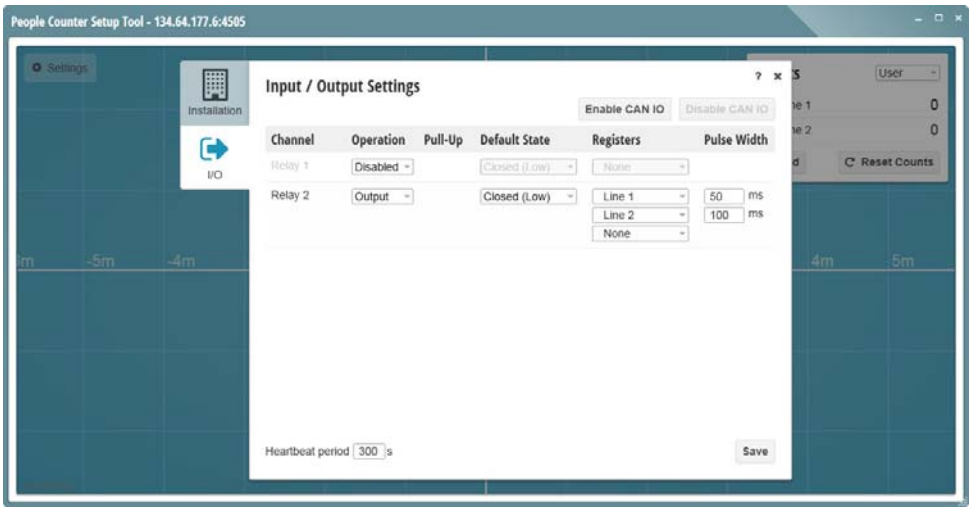


Figure 6.13.9

Note that the logging equipment would need to be intelligent enough to be able to differentiate between those different pulse widths, otherwise it would still not be able to report separate individual register count values.

An alternative to using differing pulse widths on the same relay output in order to accommodate multiple registers, is to use the Irisys CAN I/O module, see next section.

In most cases, for common dual input loggers, you would simply assign count line 1 to output on relay 1 and count line 2 to output on relay 2 and then connect each separate relay output to the corresponding input on the logger, as shown below:

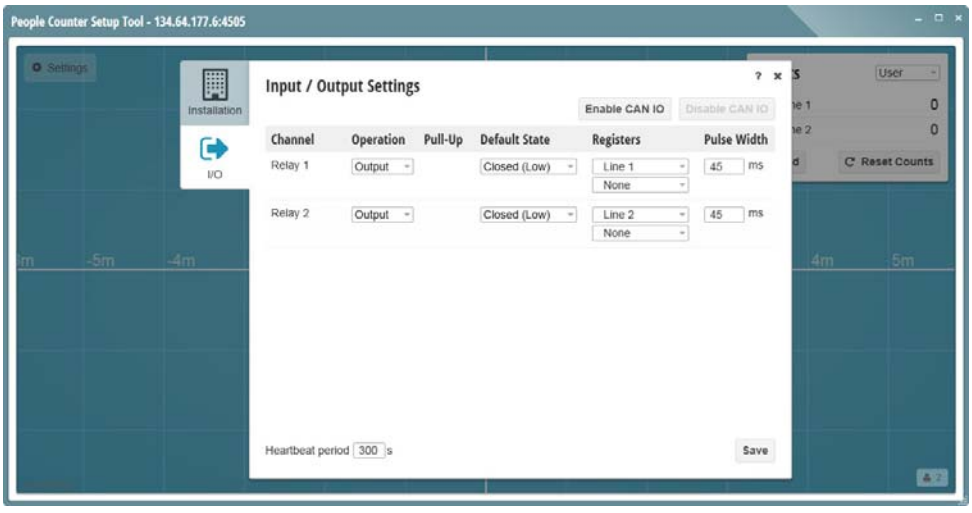


Figure 6.13.10

This accommodates the vast majority of IN and OUT counting requirements.

When finished, click the ‘Save’ button to store your settings and return to the ground plane view.

6.13.1 Configuring a Heartbeat

Each counter has an internal Heart beat function intended to be used as an early fault warning system. When configured, the counter will continually output a relay pulse of specified width, after the specified period, on the configured Relay Output.

The intended use of this pulse is so that, if ever the heartbeat pulse stopped being received by the logging equipment, it would 'know' straight away that there was a problem of some kind, and an alert could be raised to call an engineer or investigate further. Not all loggers support this functionality.

To enable the heartbeat output functionality it should be assigned to an output relay, with a suitable Heartbeat period. In the below example Relay 1 will output a 'Heartbeat' pulse every 300 seconds:

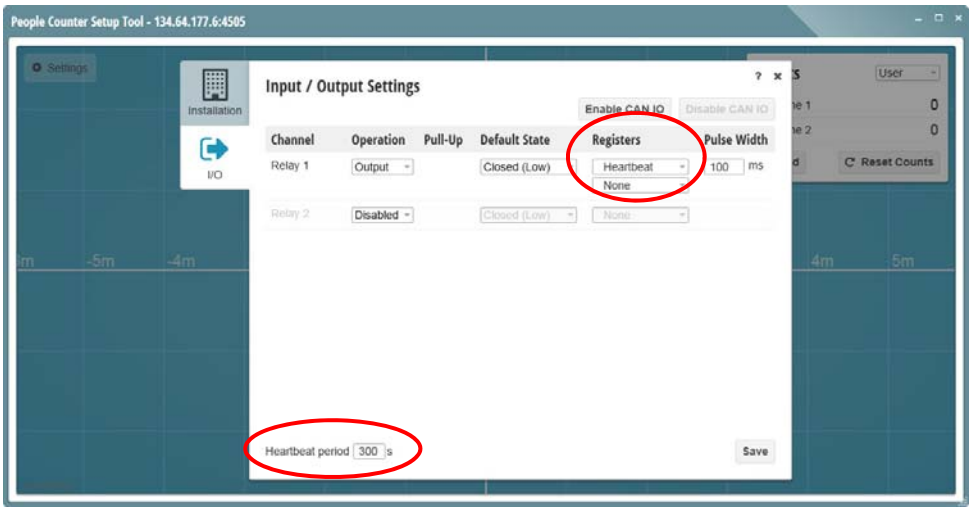


Figure 6.13.11

This means that the logging equipment should expect an incoming heartbeat pulse and should not recognize this pulse as a count increment. The heartbeat pulse can be set to output on a separate relay if required (including CAN IO Relay output channels), or can be configured with a different pulse width to standard count increment pulses, in order to achieve this (dependant on data logger intelligence):

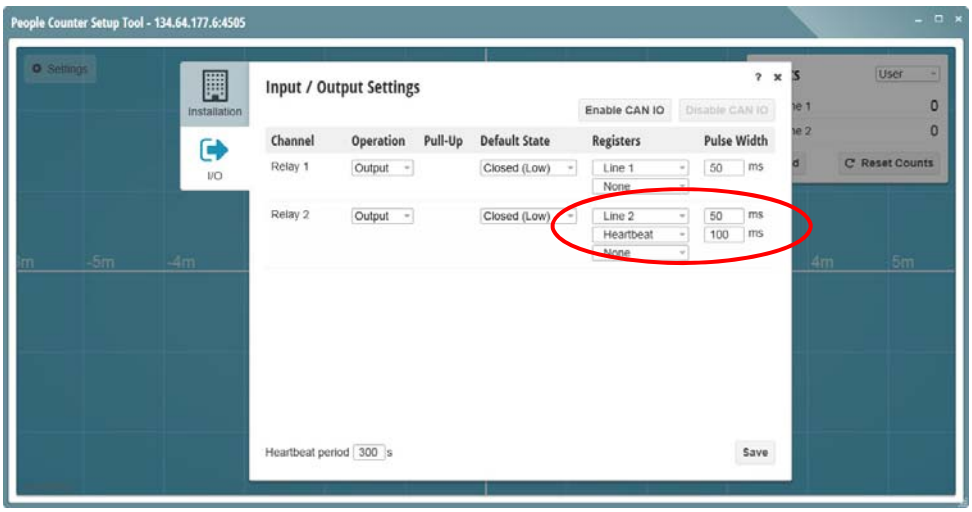


Figure 6.13.12

6.13.2 Configuring CAN I/O Settings

The CAN I/O module is an additional, optional, unit which connects to a master counter device, allowing external pulses to be counted and logged, and device counts to be output to other external devices. In this respect it is a module which provides inputs to an Irisys counter and additional relay outputs.

For more details of the CAN I/O module, including wiring connections, please see document number IPU40435, “CAN I/O Module Installation and Configuration Guide”.

Once connected to the counter network, the CAN I/O module must be enabled before it can be configured and utilised:

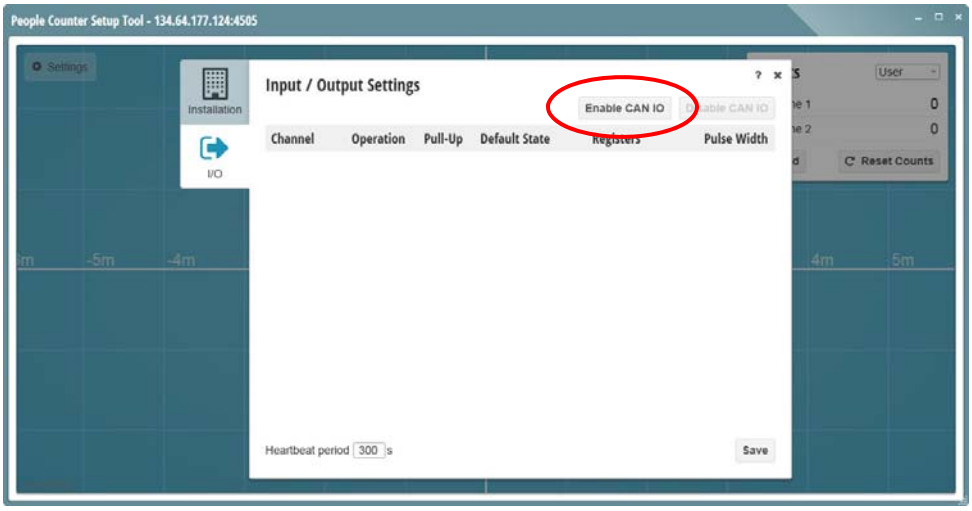


Figure 6.13.13

All of the available channels will then be displayed:

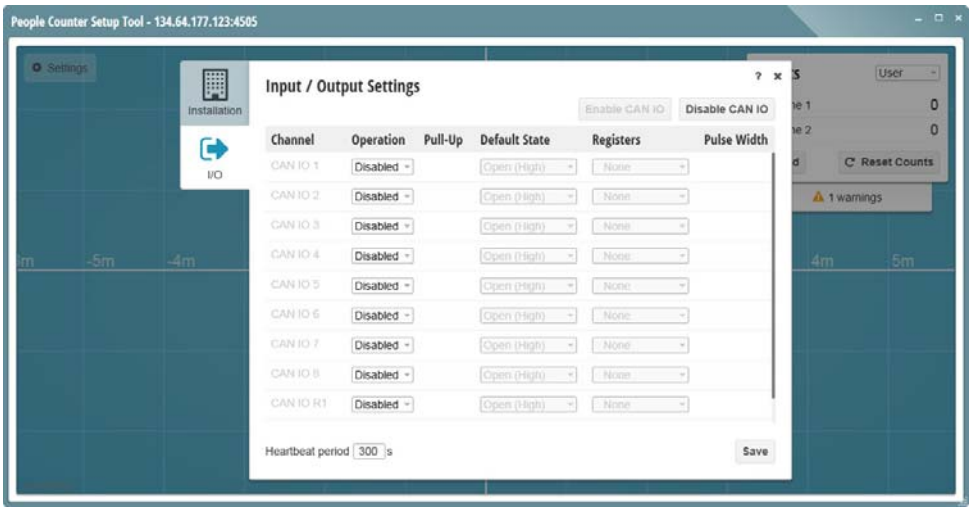


Figure 6.13.14

There are eight IO channels and two floating (opto-isolated) relay outputs available (scroll down to see any IO or relay channels not shown on screen). You may also have relays on-board the master counter itself shown here dependant on type of device and its capabilities.

Each of the eight IO channels can be configured as Inputs or Outputs, (or can left ‘Disabled’ if not required):

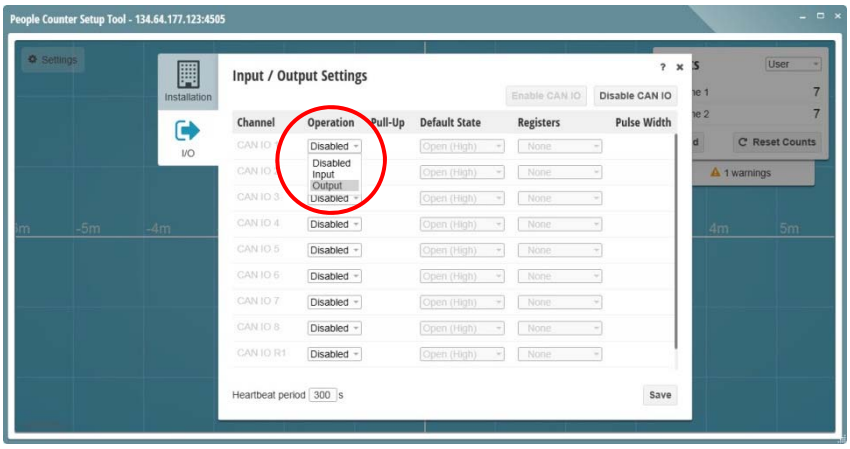


Figure 6.13.15

When finished, click the ‘Save’ button to store your settings and return to the ground plane view.

Configuring IO Channels as Outputs

When configuring a CAN IO channel to be an output, everything is configured in a similar way to any on-board relays, as described above in section 6.13.1.

First, select the ‘Output’ type operation, then set the ‘Default State’ and assign the ‘Registers’ and set their corresponding ‘Pulse Widths’. The only difference is that there is also an additional ‘Pull-Up’ checkbox option to be configured:

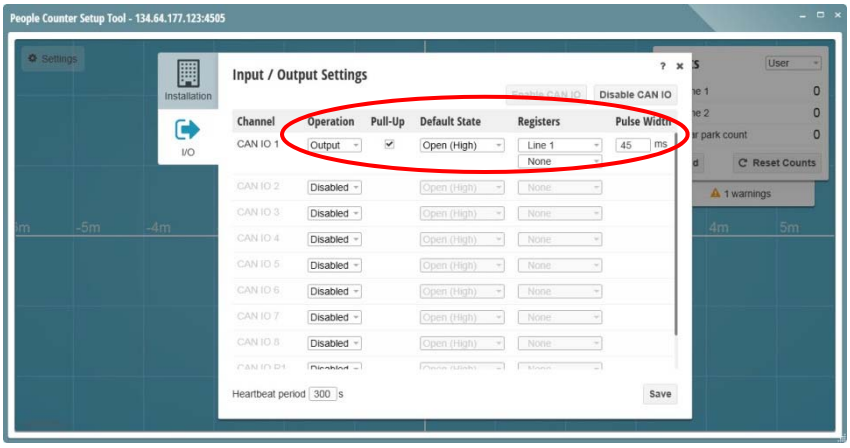


Figure 6.13.16

The Pull-Up option refers to using the internal pull-up resistor provided on each channel within the CAN IO module. Disable it if you’re using your own external pull-up, for example with a different input voltage to the supply voltage.

> See document IPU 40435, “CAN IO Module Installation & Configuration Guide” for more details of connecting output devices to the CAN I/O module.

When finished, click the ‘Save’ button to store your settings and return to the ground plane view.

Configuring IO Channels as Inputs

When configuring a CAN IO channel to be an input, first specify whether you want to use the internal pull-up available on the CAN IO module. Disabling the internal pull-up allows use of different input voltages to the supply voltage but this will be dependent on your circuitry/wiring:

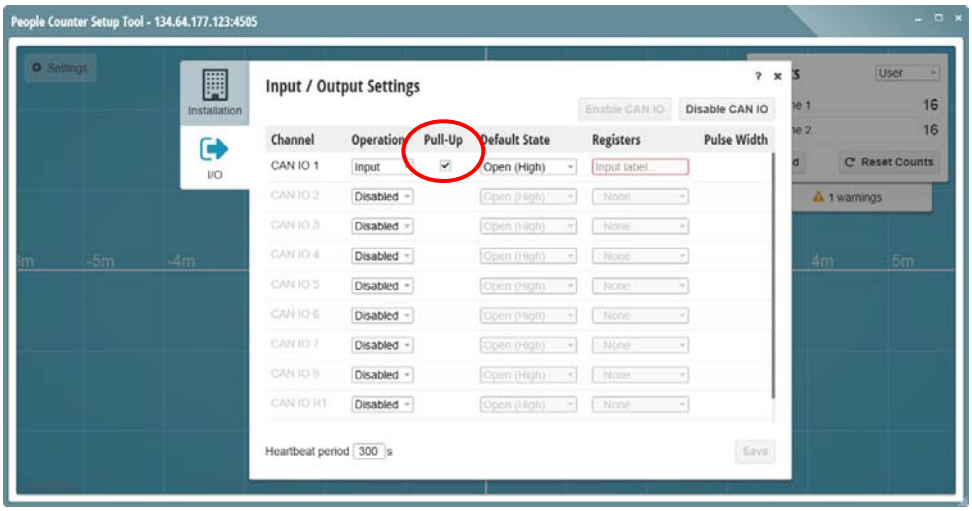


Figure 6.13.17

> Note: Disabling the internal pull-up allows use of a different input voltage from the supply voltage. Care should be taken to not accidentally enable the internal pull-up when the supply voltage is higher than the external voltage level as this could potentially damage your external hardware.

> See document IPU 40435, “CAN IO Module Installation & Configuration Guide” for more details of connecting input devices to the CAN I/O module.

Next the Default State of the input needs to be set. Choose from Normally High or Normally Low as required by your circuitry/wiring:

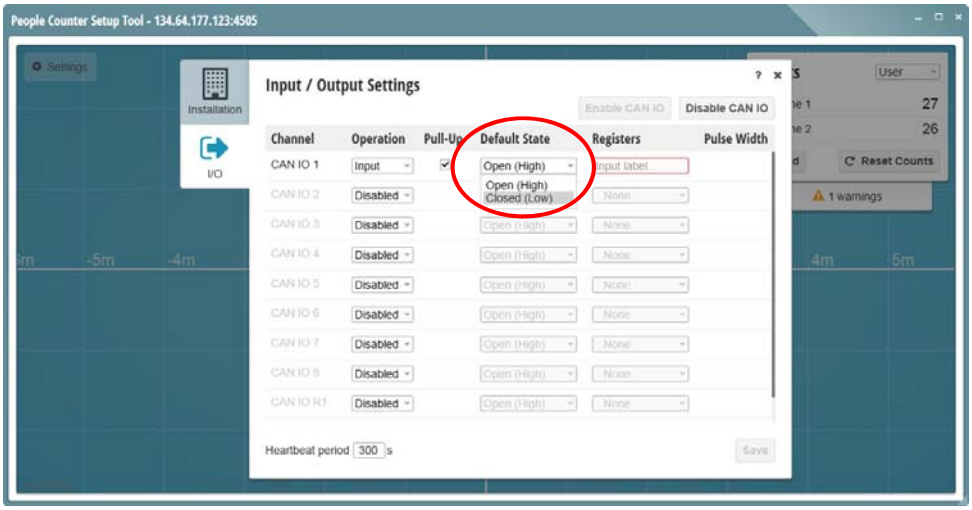


Figure 6.13.18

Lastly, you must enter a name for the register which will hold the data derived from the relay pulses coming in to the CAN I/O module on this channel.

This register name must be unique and not used with any of the lines or registers already.

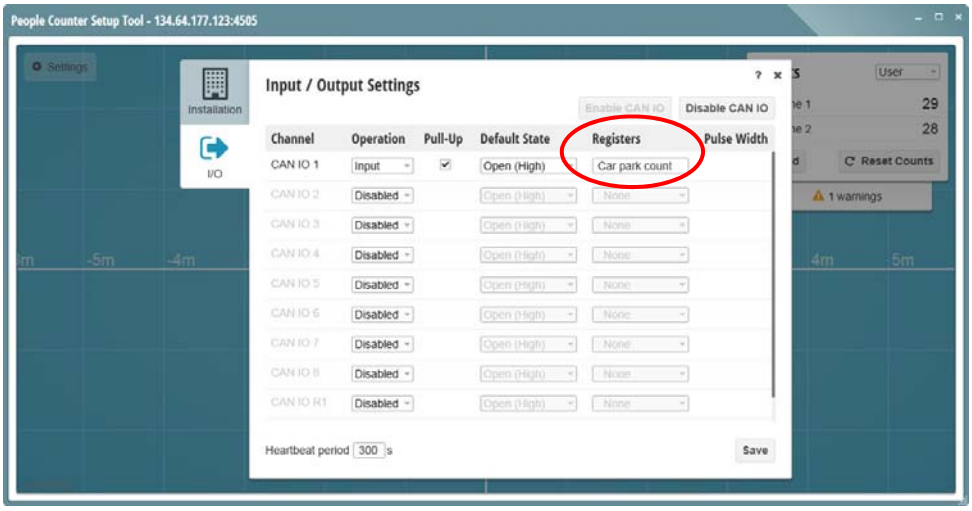


Figure 6.13.19

When complete click the ‘Save’ button and any input registers added will then be shown alongside the other registers:

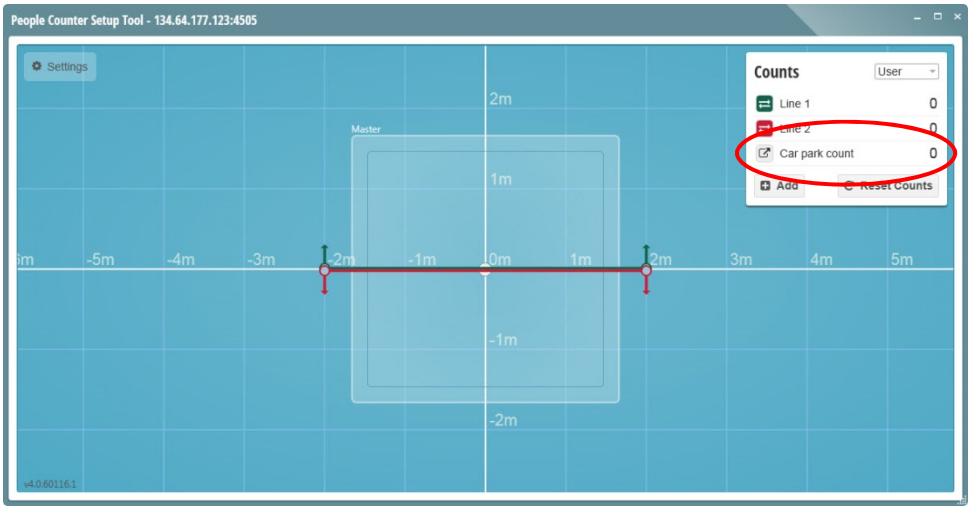


Figure 6.13.20

As relay pulses are received by the CAN I/O these are then passed to the Irisys master unit and a corresponding increment in the register will be seen. Inputs derived from the CAN I/O module are logged internally in exactly the same way as on-board line crossing registers, and advanced line logic registers, are.

Configuring the Floating Relays as Outputs

The IO Relays can be configured as output only (or left disabled if not required):

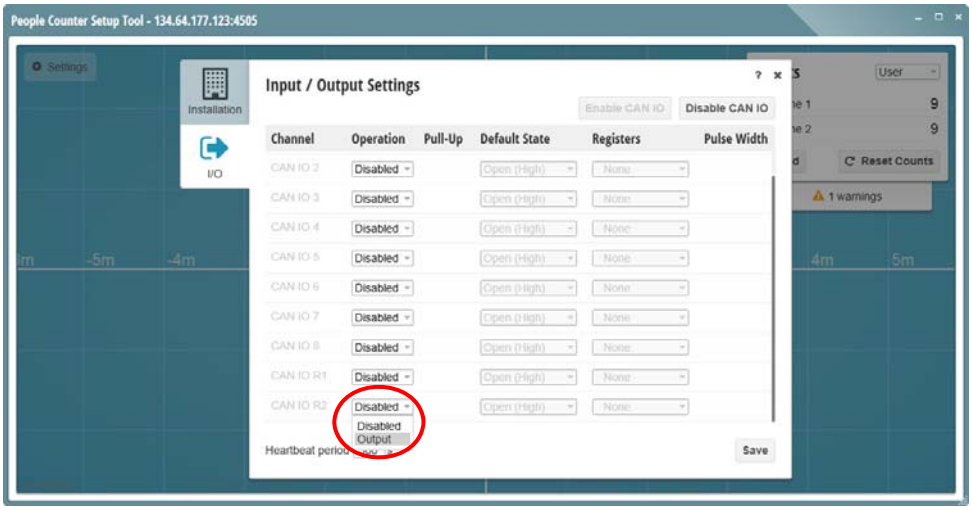


Figure 6.13.21

Once enabled configure the ‘Default State’, assigned ‘Register(s)’ and corresponding ‘Pulse Widths’:

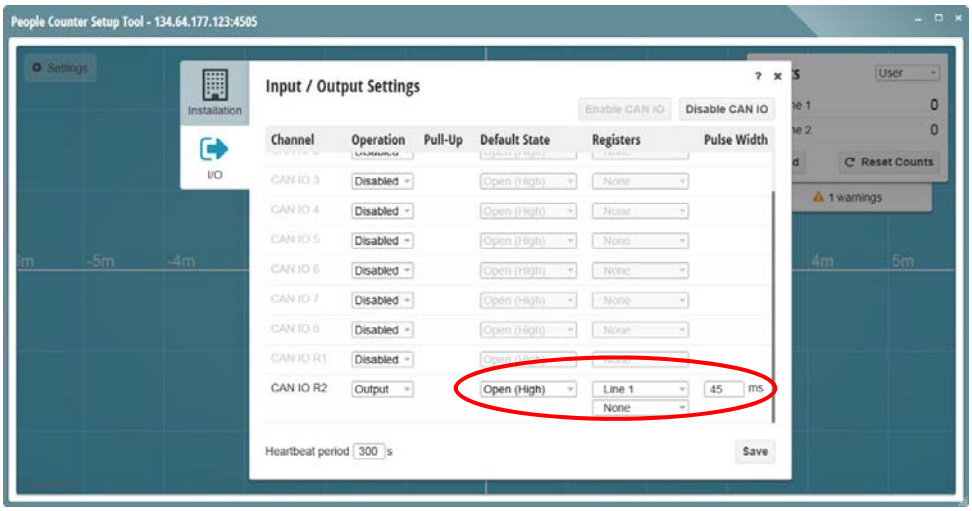


Figure 6.13.22

When finished click the ‘Save’ button to store your settings and return to the ground plane view.

6.14 Backup/Restore

The backup and restore options provide you with a means of saving a counter configuration to a file on your laptop for later loading into a similar model unit. All settings relating to counting functionality are saved into this file – IP settings etc. are not saved.

By saving the settings file, you will have record of all settings made for future reference. This also makes it very easy to duplicate a counter setup for, either, replicating the configuration at another installation which then requires little or no modification, or for straightforward effortless replacement of a damaged unit in the future.

It is always advisable to save counter settings using the Backup/Restore functionality once an installation has been finished.

> Note: When requesting technical support from Irisys for installations with accuracy problems (over counting, under counting, etc.) a backup file MUST be supplied. Irisys cannot provide technical support without this file.

To access the backup and restore options, click the 'Settings' menu:

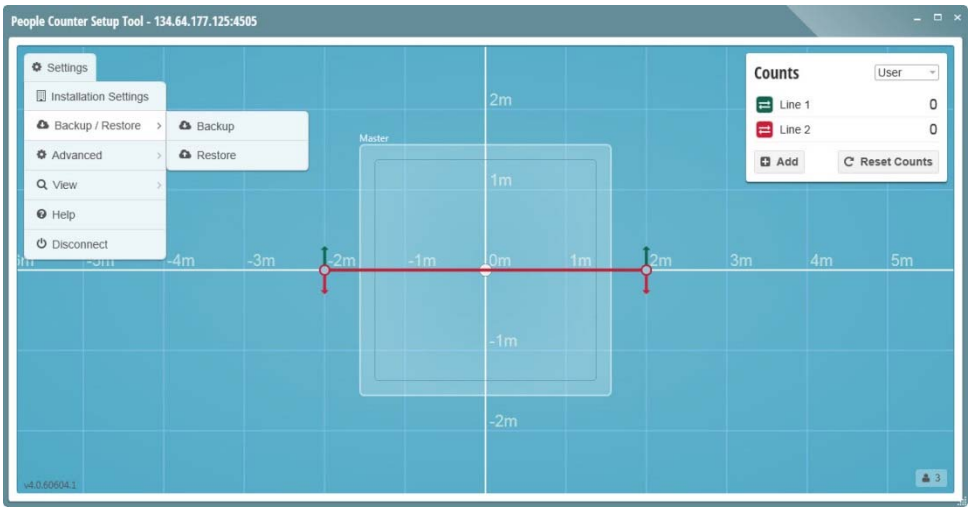


Figure 6.14.1

6.14.1 **Backup**

If you select the backup option then you will be shown a familiar Windows dialog in which to save the file:

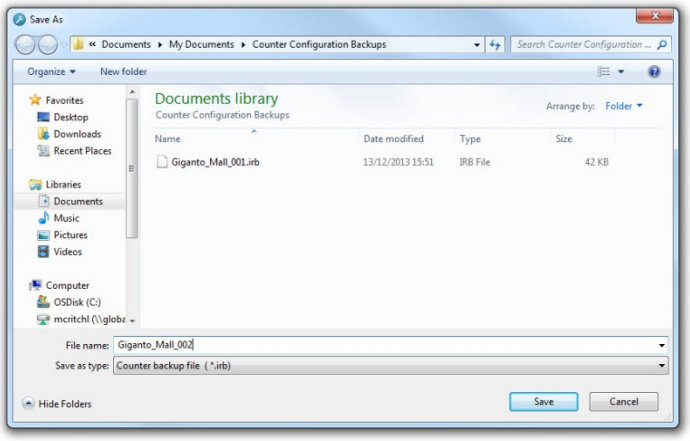


Figure 6.14.2

Just type in a relevant file name and click the ‘Save’ button.
The counter setting file will then be saved:

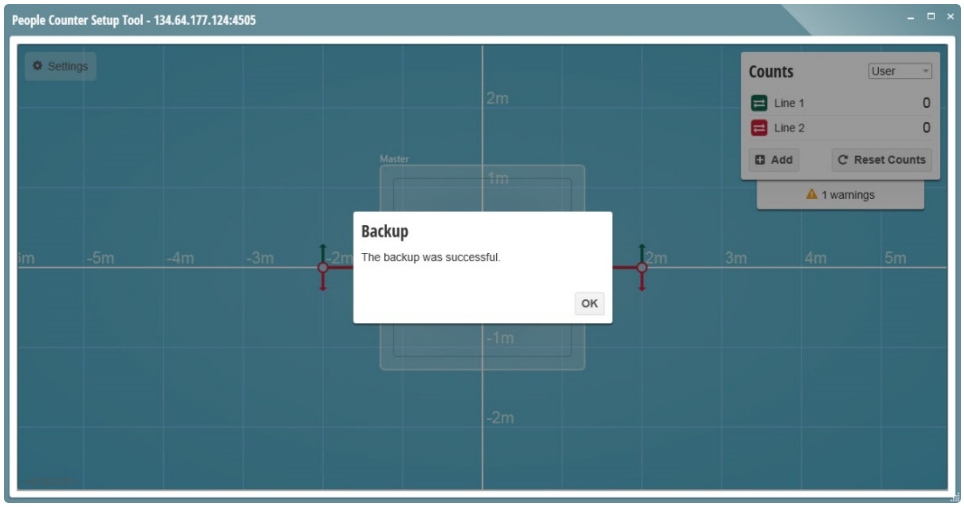


Figure 6.14.3

Backup files are very small in size and so won’t take up much disk space:

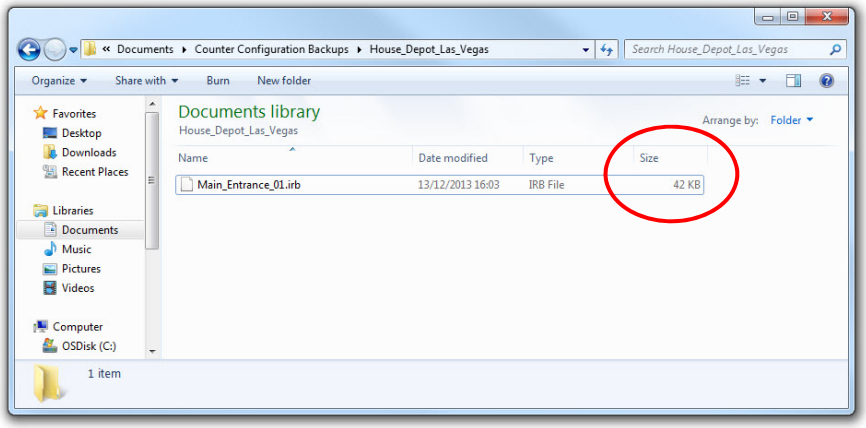


Figure 6.14.4

Multiple connected units will all be saved in one (slightly bigger) file:

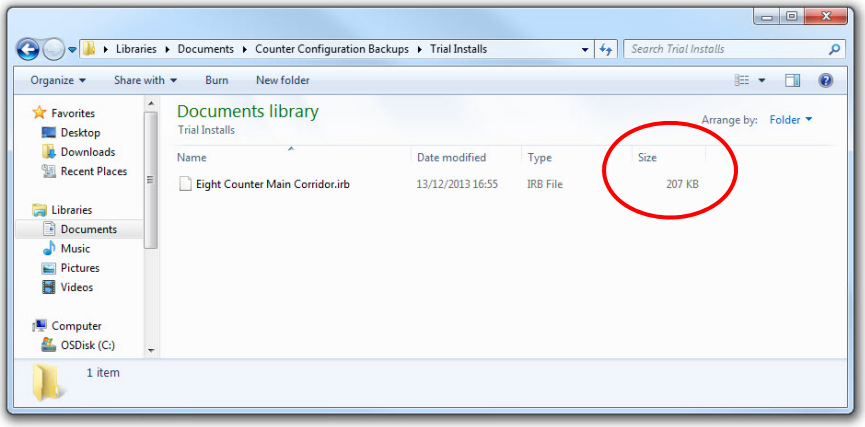


Figure 6.14.5

The benefits of creating the backup files far outweigh the small amount of space they require, and don't forget that Irisys support will require the relevant backup file in the event that you need help configuring a counter.

After a while you will accumulate quite a few backup files from various installations.

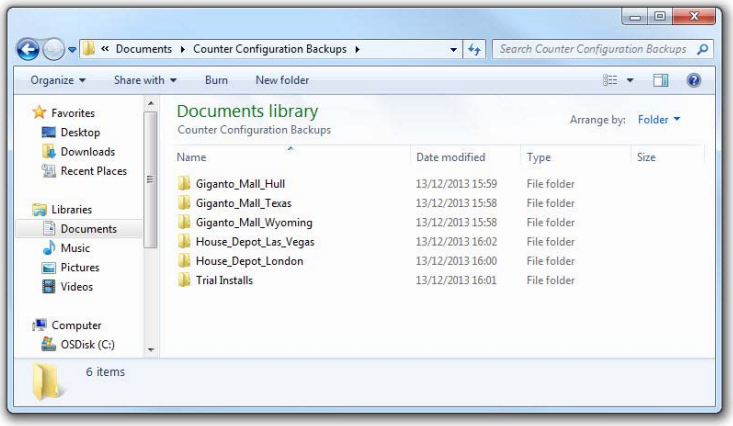


Figure 6.14.6

It is recommended that you create a folder of folder structure in which to store all your counter backup files.

Remember that the backup file will always be required when contacting Irisys technical support for assistance with counting accuracy problems. It is recommended that backup files are created as a matter of course in case any problems become evident in the future.

6.15 Restore

To restore settings from a previously saved backup file into a counter, the Restore option is used. Selecting the Restore option will bring up the following dialog window:

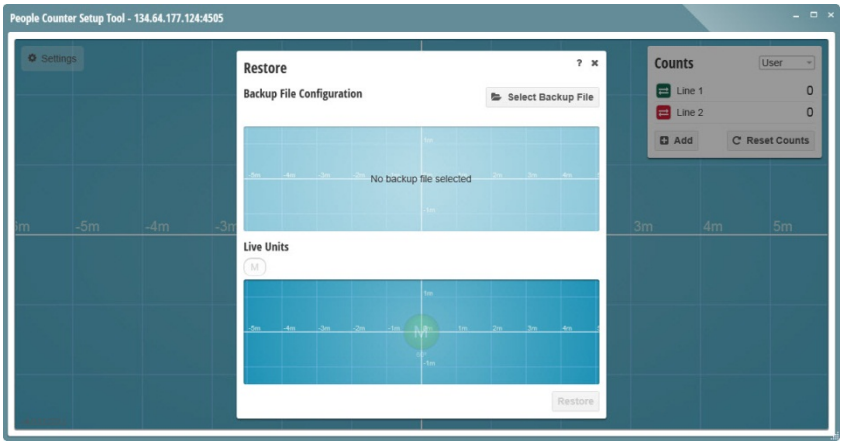


Figure 6.15.1

On this dialog, counter information is displayed from both the backup file (at the top) and the connected unit(s) (at the bottom). An 'M' indicates a single master only. Until you select a backup file, the top part will be empty, so the first thing to do is click the 'Select Backup File' button and navigate to the required backup file:

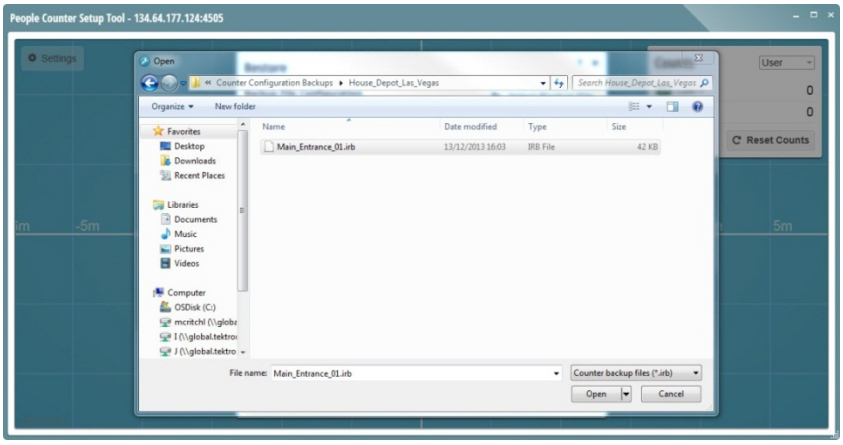


Figure 6.15.2

Once a file is loaded the counters contained within the file will be displayed:

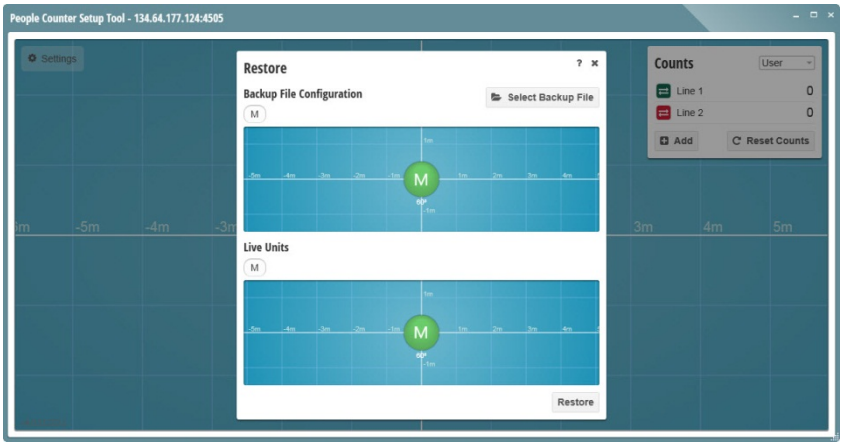


Figure 6.15.3

When you have a single unit in the Backup File and a single Live unit both will be highlighted automatically. Note that the M indicates a master unit in the file and a master unit on the ceiling. Just click the ‘Restore’ button and the restore will begin. The actual process takes less than a second:

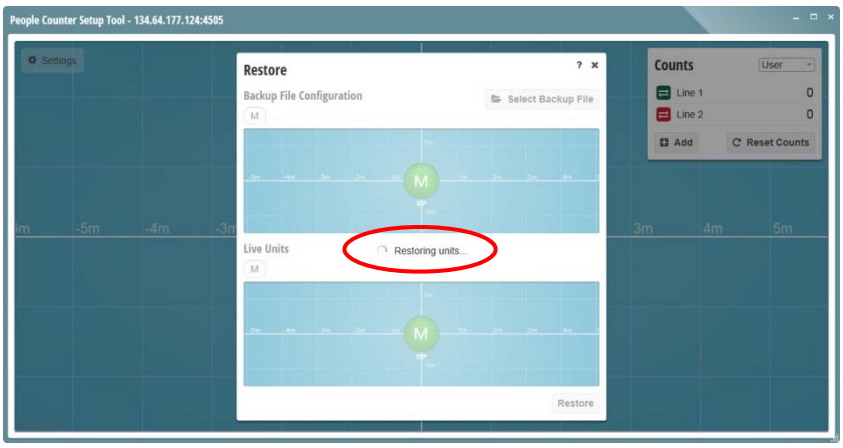


Figure 6.15.4

Note that Master units, marked with an M, can only be restored from Master units in the backup file, and similarly Node units marked with an N can only be restored from Node units in the file.

Once restored, simply click the ‘OK’ button and you can then close the Restore dialog window. The new settings will be quickly verified to make sure that they are valid in the current system configuration and then you will be returned to the main ground plane.

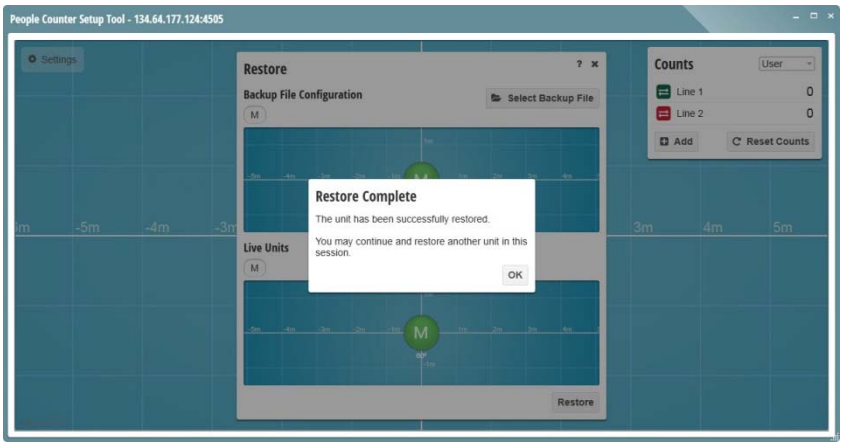


Figure 6.15.5

In all cases each unit is restored individually - one at a time - so take care to highlight the correct units when restoring to multiple units on a wide opening network. Always check the positioning of each one to ensure that it is correct. When restoring settings to units with similar (or identical) placement (X and Y) settings then the mapping of unit from file to unit on ceiling is relatively easy, but for brand new units which have never been configured, these will all have default X and Y settings which place them in the same location on the ground plane view. When restoring previously saved settings to new units extra care should be taken to ensure the correct units are identified and configured. See section 6.15.1 for more details.

To restore an individual unit, simply highlight the unit in the ‘Backup File Configuration’ (top) and highlight the ‘Live Unit’ (bottom) and then click the ‘Restore’ button.

The count line and register settings are stored in the master unit only, so if you want to revert back to a previous count line configuration, and all placement settings are unchanged, then you only need to restore the masters settings.

Note: Only on rare occasions will a Restore file have a different number of units from the number of ‘Live’ units on the ceiling. If you find that the Restore file does have a different number of units, check that it is the correct file for that installation, and if it is, make sure that you are restoring the correct individual units from that file.

When a Master unit is selected from the Restore File, this can only be restored to a Master ‘Live’ unit. Note that you cannot select a Node unit in the Live view when a master is selected in the backup file (Node units greyed out):

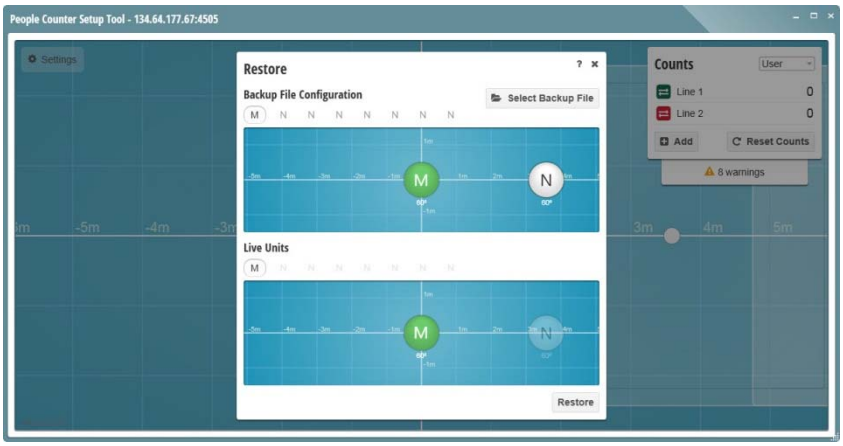


Figure 6.15.6

Similarly Node unit settings can only be restored to Node units, but always check that you are restoring to the correct Node unit when multiple nodes are present:

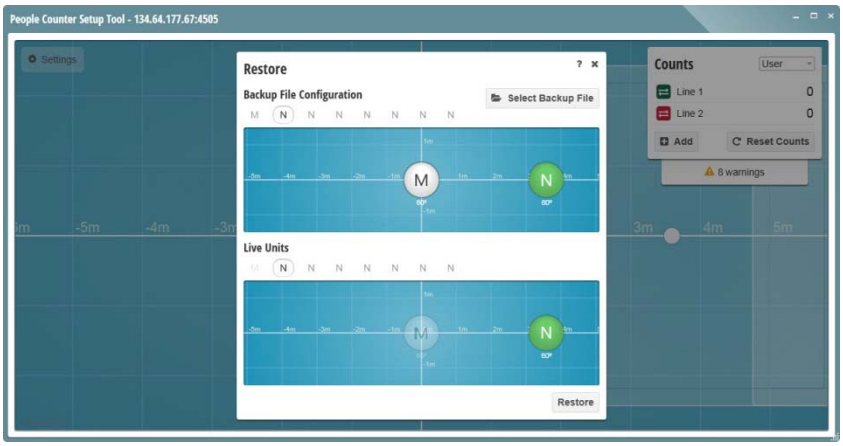


Figure 6.15.7

Remember that you can scroll around both the virtual ground planes in the top and bottom windows, as required, in order to see the other units:

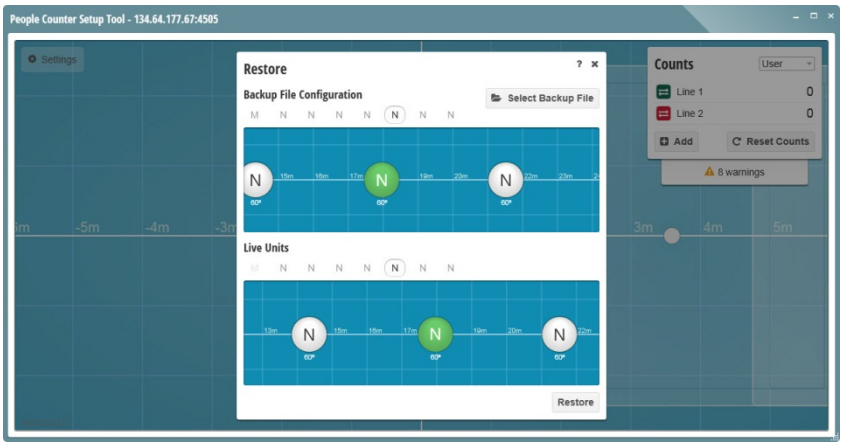


Figure 6.15.8

6.15.1 **Restore To New Units**

When connecting to new unconfigured units…

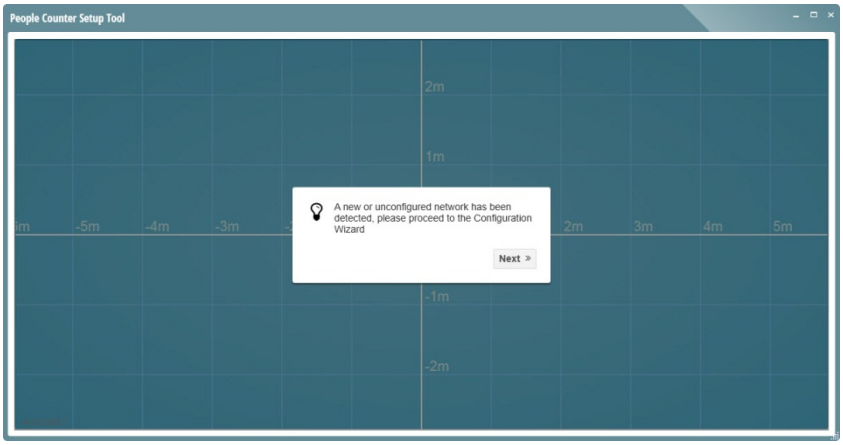


Figure 6.15.9

… You can jump straight to the restore dialog options by clicking the ‘Restore’ button at the bottom of the Configuration Wizard dialog window:

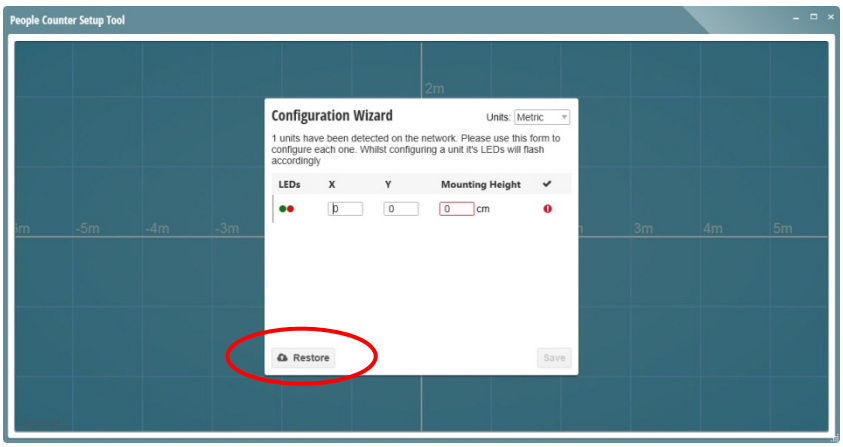


Figure 6.15.10

For a single unit the process from this point is identical to that shown in section 6.15, above, but for multiple new units, each new unit will have exactly the same default X and Y information and so selecting the units to restore to via the ground plane will not be possible:

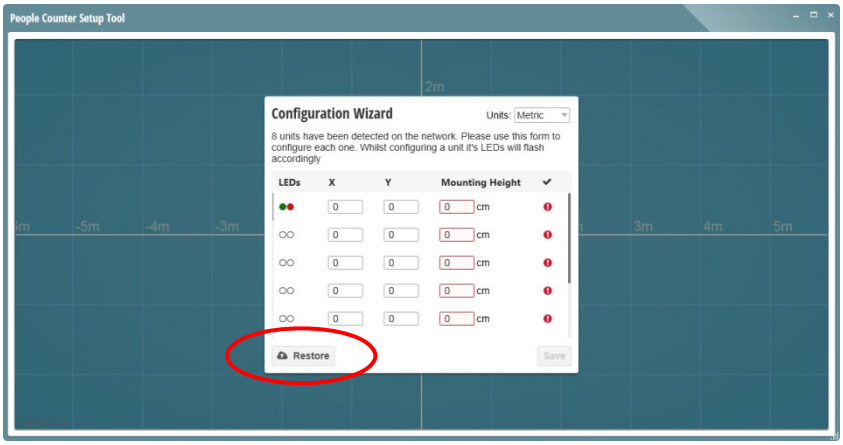


Figure 6.15.11

By having the default X and Y information, each one will be positioned in exactly the same place (0, 0) on the ground plane, but notice that – in this example – the correct number of units is being shown (always check):

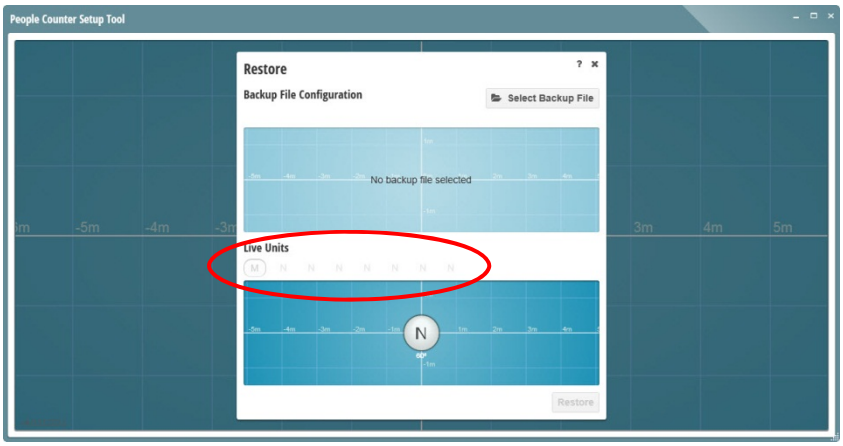


Figure 6.15.12

If we now open a backup file and show the contents we can begin the restoration process:

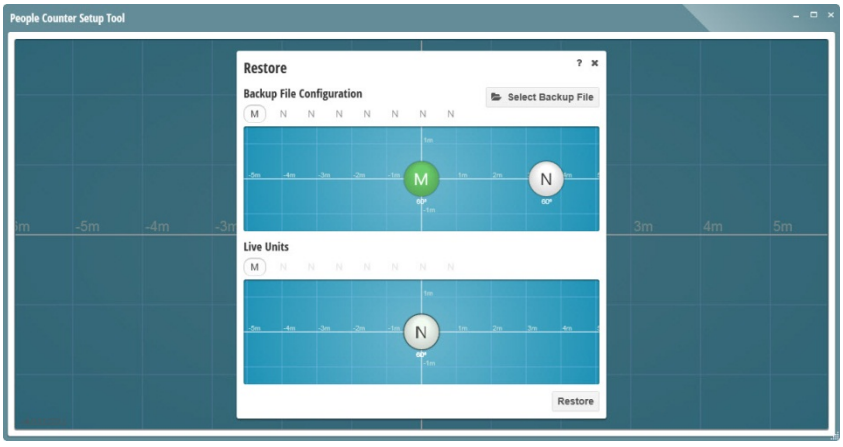


Figure 6.15.13

If necessary you can also click and drag to move around the ground plane view(s) and use your mouse scroll wheel in order to zoom out and see all the units, if required:

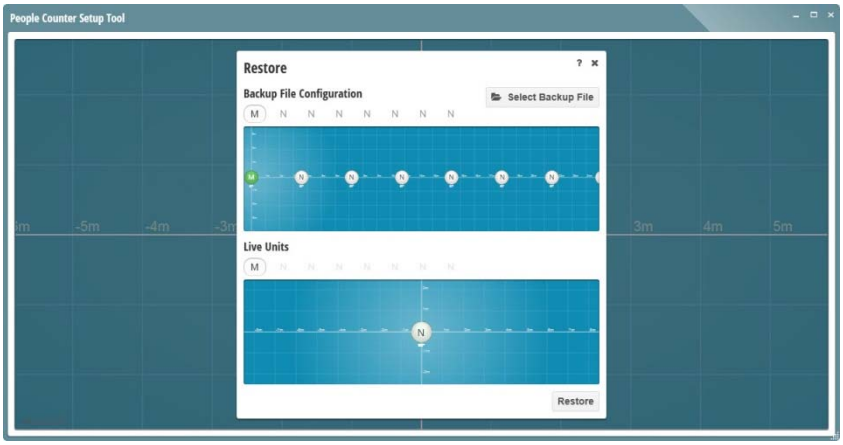


Figure 6.15.14

Remember that new units will all have the same X and Y values and so will all be in the same spot on the ‘Live Units’ ground plane until configured with correct values.

In this case there are eight units in the file and eight ‘Live Units’ installed on the ceiling so all should be straight forward.

We can see that the Master unit is highlighted in the Backup File ground plane and we also know that master settings can only be restored to master units so we can go ahead and click the Restore button to set the correct Master settings:

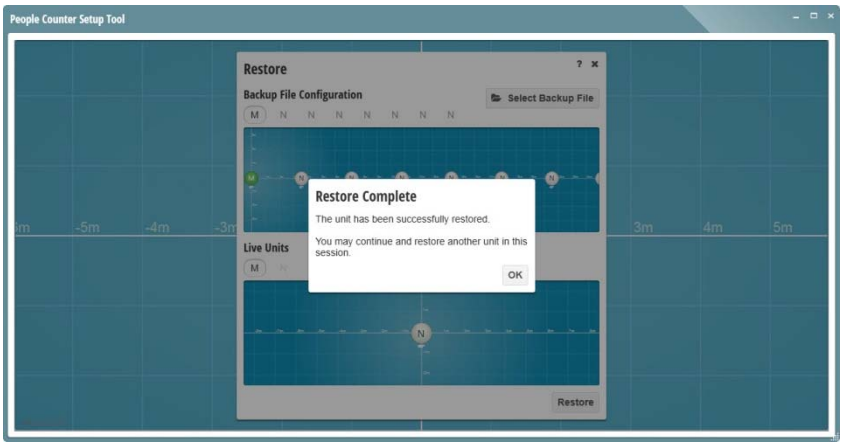


Figure 6.15.15

When all the ‘Live Units’ are shown in the same place, it is straightforward to click the top unit and see which unit that relates to by looking for the unit flashing its LEDs, and then to restore the required settings for that unit.

In this example clicking on, and highlighting, the top unit makes the fourth unit in the line flash its LEDs and so this one needs to have the settings from the forth unit in the Backup File restored to it:

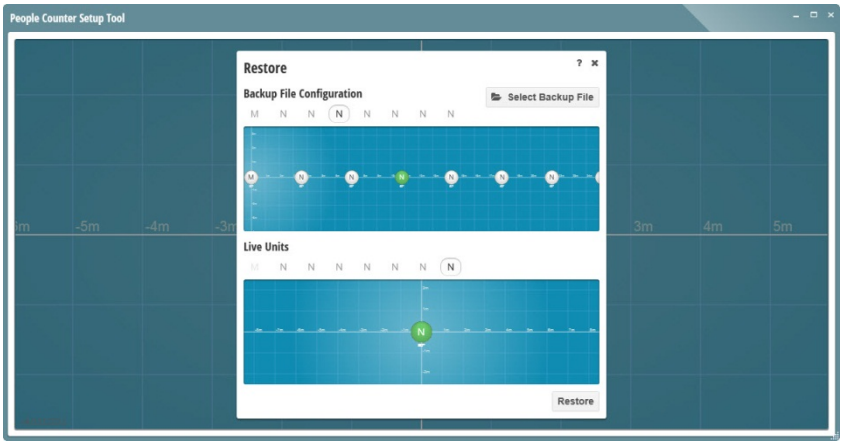


Figure 6.15.16

Once this is unit has its settings restored we can see that the unit is now in its new position on the Live Unit view, and can proceed with the next unit:

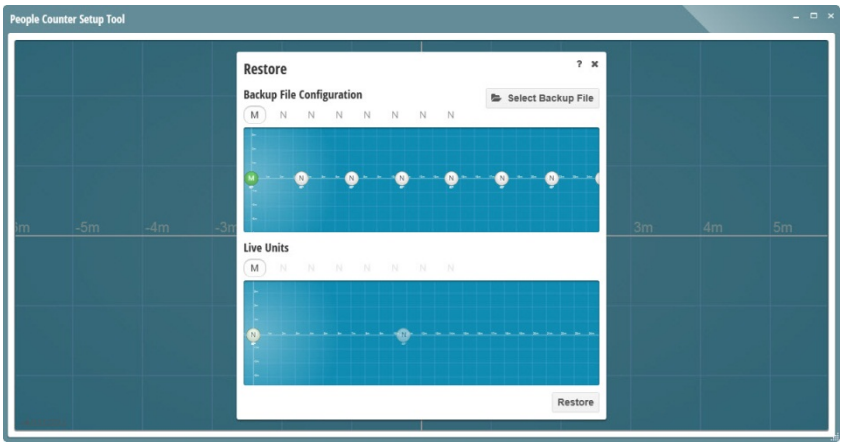


Figure 6.15.17

You should now continue restoring each unit in turn by clicking the ‘top unit’ at position X=0, Y=0, in the Live Units window. Locate it on the ceiling and restore its settings until they’re all done:

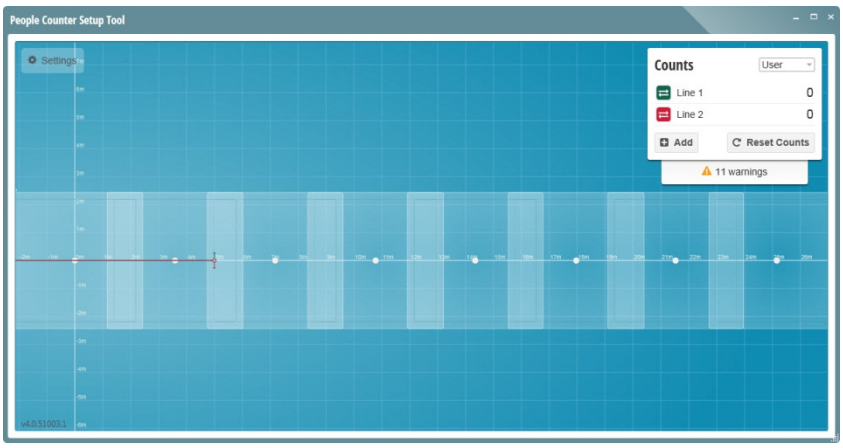


Figure 6.15.18

Once complete, it is advisable to walk from left to right/right to left in order to ensure that the units have been positioned correctly. If correct, then the target representing the person should smoothly transfer between each counters field of view as below:

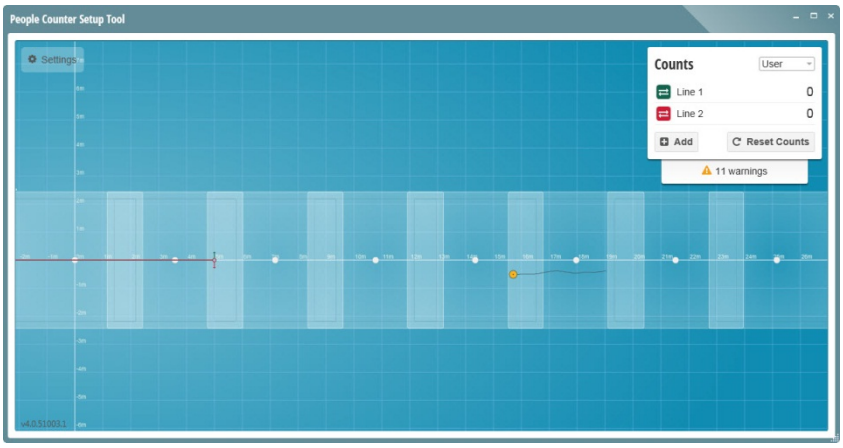


Figure 6.15.19

If at any time the target does not move fluidly between views but instead misses out a counter and jumps to a different (out of sequence) counter, then you can be sure that they've not been configured to be in the right place relative to the others. To fix this, you can either restore the affected units settings individually or you can manually change the X and Y settings by going into the device settings for those units.

Always remember that unconfigured units do not know where they are on the ceiling in relation to the other units and so the list of ceiling units is just an unsorted list with their positions in the list not corresponding with their physical positions on the ceiling! You MUST look up at the physical units on the ceiling in order see which one is flashing its LEDs and then restore the relevant settings to that unit.

Whenever you click a different 'Live' unit, a different unit on the ceiling will flash its LEDs, and in this way you can work out which unit is which.

6.16 Tuning

The Tuning settings affect how the counter interprets the infrared radiation (heat) emitted from people as they walk underneath the counter. It is essential that these settings are configured appropriately so that each person is tracked correctly and therefore give the correct count increments if, and when, they cross any count lines.

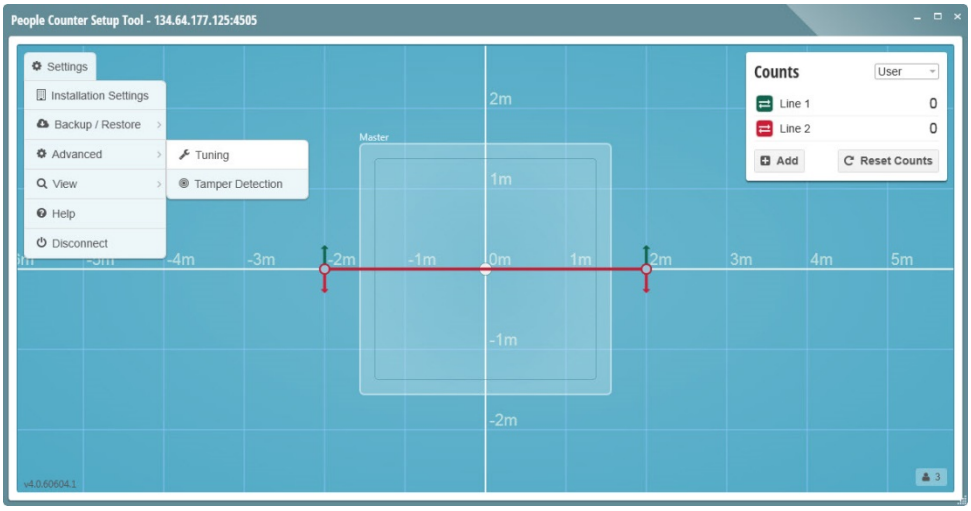


Figure 6.16.1

Selecting the Tuning option will overlay an additional dialog with the tuning options on it:

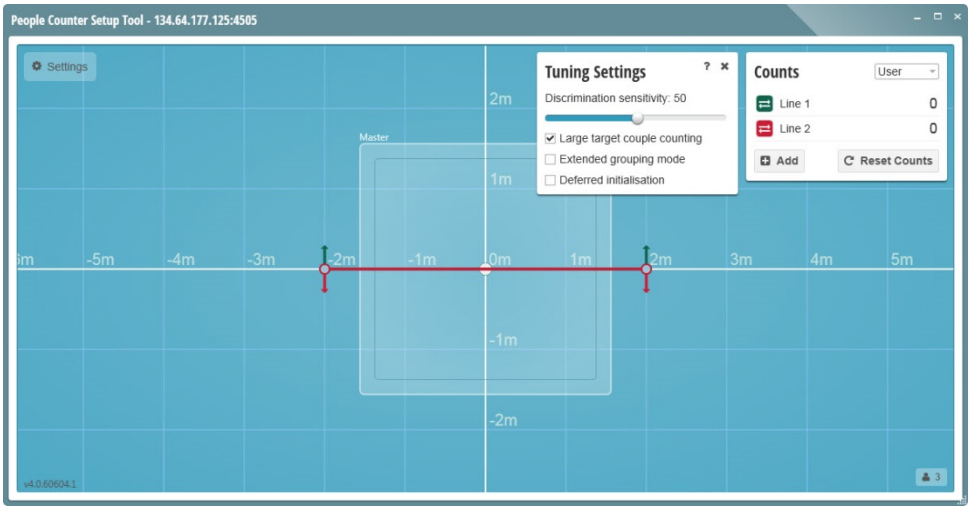
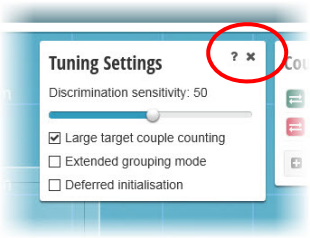


Figure 6.16.2

In a lot of cases the default settings will be optimum but it is essential that they are checked and tweaked if necessary.



See the following sections for details of each option. Further help can be obtained from within PCST by clicking the '?' in the top right of the Tuning settings window.

Click the 'x' to close the Tuning settings window.

6.16.1 **Discrimination Sensitivity**

The discrimination sensitivity slider is used by the counter to help identify individuals based on the thermal ‘signature’ being seen by the counter.

Sometimes a single person can be seen as more than one ‘object’ and this is more likely to happen at very low heights where a person’s arms and legs may be seen as separate thermal objects.

Other times people who walk very close together can be seen as only one object, and this is more likely to happen at very high heights when the counter may be far enough away from the people to be not able to separate two people walking side by side.

By adjusting the ‘Discrimination Sensitivity’ slider, you can affect how the counter groups thermal objects together.

If you raise the sensitivity then the counter is more likely to keep separate any group of targets so that they are counted individually. It is also more likely to treat a large target as a couple and count that one target as two people if it crosses a count line (see section 6.16.2 to turn off this feature manually).
If you lower the sensitivity then the counter is more likely to treat a group of thermal objects as a single target.

You cannot see the thermal ‘objects’ as seen by the counter. But, you can see the targets, which are how the counter has interpreted the objects. Adjusting the Discrimination sensitivity affects the interpretation behaviour.

You should always perform extensive walk tests at every counter installation to ensure advanced settings such as these are configured correctly.

You can disable couple counting completely if required, see next section.

6.16.2 **Large Target Couple Counting**

Depending on the Discrimination Sensitivity setting and what the counter is seeing, occasionally a single target will be counted as two. This is when the counter considers the target to be two people walking close together – a couple.
The couple counting algorithm works by comparing the size of a target with an internal table of sizes that it would expect to see at the installed height. If the target is larger than expected, and the right shape, then it is deemed to be two people and will then generate two count increments if it crosses a line instead of the usual one increment. This all happens automatically and its effect can be altered by adjusting the Discrimination sensitivity as explained above (section 6.16.1), however, to completely disable this functionality you can switch it off here by removing the tick from the tick box. This would only normally be necessary if this feature was causing significant over counting. Incorrectly disabling this feature could lead to under counting in some circumstances.

You should always perform extensive walk tests at every counter installation to ensure advanced settings such as these are configured correctly.

6.16.3 Extended Grouping Mode

The extended grouping mode should be left disabled in most cases. When enabled, the counter will associate individual heat sources within the counters field of view as coming from the same thing. Effectively it joins together many people and tracks only one target which will be counted as one only if it crosses a count line. Primarily this mode is to allow the counting of groups of people who enter together as one basic ‘shopping unit’ which may be required in some circumstances, for example if a retailer wants to count whole families as one customer visit.
By changing the discrimination sensitivity slider you can affect how far apart individuals can be to still be joined together, in this way even people who are very far apart will be joined together and counted as one. This option is based solely on proximity of people to each other, so it is possible that two unrelated individuals who walk in to an area at the same time will be joined together and counted as one.
This option can also be enabled if supermarket shopping carts are being still being counted, after disabling couple counting and altering the discrimination sensitivity slider. Once enabled, the discrimination sensitivity slider should be re-evaluated in all cases.

6.16.4 Deferred Initialisation

This option is included to help with problems associated with a rapidly cooling or rapidly heating floor being detected as a target. This can happen when the floor is hot – usually heated by direct sunlight falling on it – but then a door opens, a cold wind rushes in and blows across the floor sufficiently for it to be cooled rapidly and be detected by the counter as a temperature change. A target is then seen to be initialised which then travels across the floor as the wind blows over it. Obviously, a target such as this could cross a count line and add to the count total giving count inaccuracies. To help avoid this you can switch on the ‘Deferred Initialisation’ option.
With this switched on, an extra initialisation step is involved before a target is created. This extra step ensures that these ‘Ghost’ targets are not seen and therefore are not counted. This option should NOT be enabled unless this problem is observed, because, as the name suggests, the initialisation of a target occurs much later and this could mean that valid targets have crossed the count line before being recognised as such – meaning that they are not counted at all. This could lead to under counting if enabled when not required.
When enabling this option to help prevent ‘Ghost’ targets, always ensure that there is sufficient target initialisation time for genuine targets. Again adequate walk testing is recommended to ensure this.
Enabling this option will not fix issues to do with seeing movement of the doors within the field of view, or assist with fixing issues associated with units being too close to the door.
The movement of doors is perfectly normal as these will most likely be a different temperature to the floor and therefore will be seen if they move within the field of view. In order to not count the movement of the doors simply configure the count lines around the doors so that the movement will never cross the line(s).
If units are positioned too close to the door then the movement of the doors is more likely to be within the field of view and the size of the available ‘useable’ part of the field of view will be drastically reduced. In these cases move the unit(s) further from the door as recommended in Irisys installation practices.

6.17 Tamper Detection

The Tamper Detection functionality is available on Gazelle units only. It provides a mechanism for identifying possible periods of tampering, such as the temporary blocking of the lens in order to bias the count numbers and/or effect a higher ‘conversation rate’ (an often used retail KPI comparing the number of visitors to the number of sales).

The Tamper Detection functionality has been added to assist with the analysing of count data for possible periods of tampering.

To enable ‘Tamper Detection’, select it from the main ‘Settings’ menu:

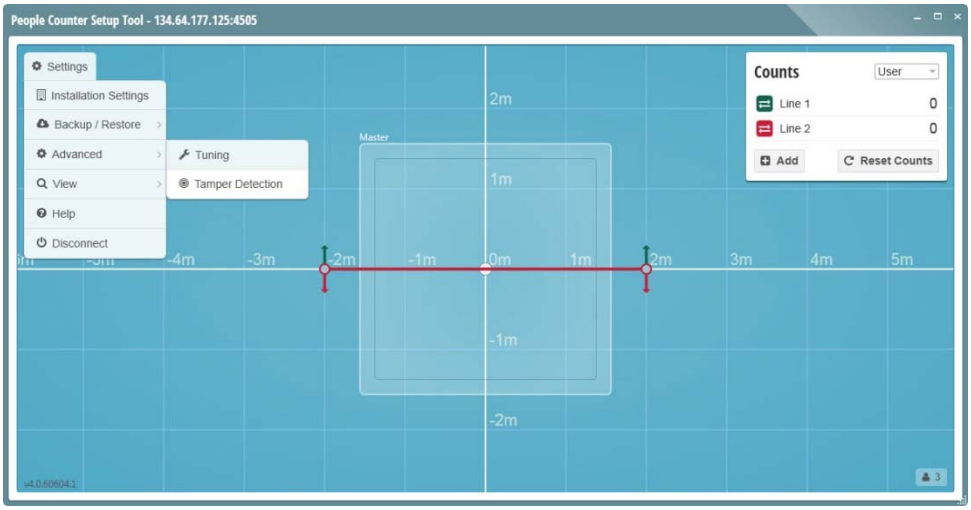


Figure 6.17.1

When enabled, an additional ‘Tamper’ register will be added to the counts dialog:

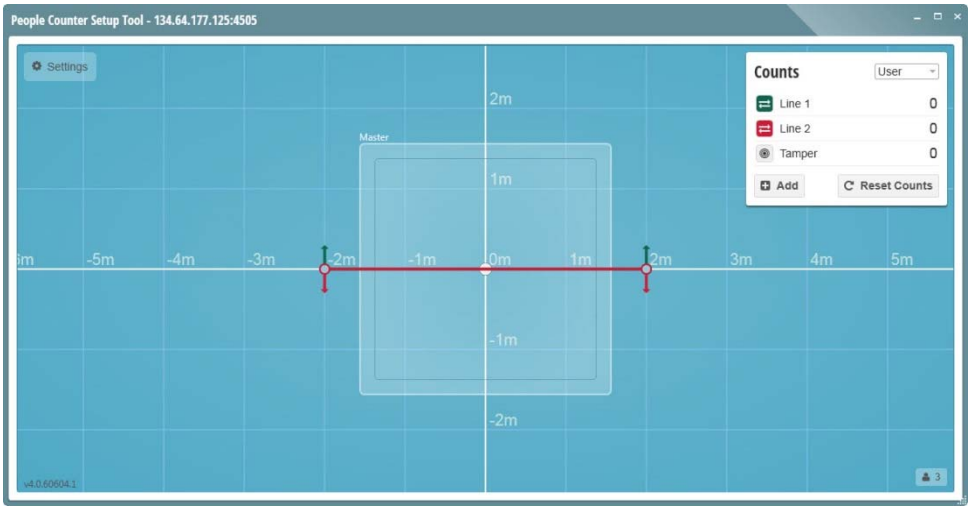


Figure 6.17.2

This register is accessed in exactly the same way as the regular count line registers (via the APIs or as a relay output, as required), and will increment when a possible tampering incident has been detected.

If you do not see the Tamper Detection option, please download the latest firmware update from the Irisys partner portal and update your unit.

6.17.1 How the Tamper Detection Function Works

When someone tampers with an Irisys Gazelle People Counter and attempts to mask it, their movements close to the detector will create patterns of thermal change which are unlike the responses generated normally as people walk under the device. Putting things over the lens will also create small vibrations which the Gazelle is also capable of detecting. This is because of the unique capabilities of the thermal sensing array which is used inside.

When the above mentioned tell-tale signs are identified, the separate 'Tamper' register will increment independently from the recorded count data registers.

> It should be noted that in exceptional circumstances, the Tamper Detection function may be triggered by normal activities, see below.

6.17.2 How to Use the Tamper Detection Function in Your System

The Tamper Detection system could be triggered inadvertently, so a data analyst should always look at the Tamper register in conjunction with the count data registers. If the Tamper register shows one or more increments in a fifteen minute count log period (assuming 15 minute logging) and the other count registers showed no increments (or much less increments than in the preceding or following count logs) then this may well point to a tampering event where the lens was purposefully blocked for a period. But if the Tamper register incremented and the other registers continued to count 'normal looking' data, then – although possible – it is probably unlikely that the device was actually tampered with at that time.

In ideal scenarios, the Tamper register will increment once at the start of a period of tampering (when lens is initially covered) and once following it (when cover is removed).

In the below table of data, the period marked in red from 9:45 to 10:00 could well indicate a period of tampering because the Tamper register has incremented and the two enabled count registers are markedly lower than the preceding and following values.

	Count Log Periods (15 Minute Logging Interval)							
Register	09:00-09:15	09:15-09:30	09:30-09:45	09:45-10:00	10:00-10:15	10:15-10:30	10:30-10:45	10:45-11:00
Line 1	10	20	29	5	30	35	32	30
Line 2	10	19	31	5	25	34	35	31
Tamper	0	0	0	2	1	0	2	0

Table 6.17.1

However, although the next count log period has an increment to the Tamper register, the count values on Lines 1 & 2 are similar to the next count log period after that so this may indicate that it is not a period of tampering. It could, however, indicate that any masking of the lens from the previous log interval was removed sometime during this log interval - probably at the beginning of it. Again the period 10:30-10:45 shows a Tamper increment but the count values seem normal when compared with other periods.

6.17.3 Excessive Tamper Register Increments

In normal operation the Tamper register may, on occasion, trigger inadvertently and by looking at the count data in the same period it will become obvious that this has occurred.

If however the Tamper register is consistently incrementing all of the time, then this would indicate a different issue which should be investigated.

There are two additional reasons why the counter may generate additional Tamper register increments:

Firstly, if the unit is installed below the recommended mounting height then it is possible that very tall people will be both counted and also recognised as a Tamper event. This is because the infrared signal from a tall person may take up most of the array field of view when passing very close to it. You should check to make sure that the height setting is correct and that the unit is installed above the 2.5m recommended minimum whenever possible, but at the very least above the minimum extended height of 2.2m at all times. Units should never be installed lower than 2.2m.

Secondly, if the unit is not secured correctly, and is allowed to move, that movement of the unit may cause the register to increment. This is especially likely if installed on the end of a pole or bracket which moves in the wind or when the door opens or closes. Additionally, units should never be mounted directly onto things like air-conditioning units or heaters for the same reason – any vibration from the motors contained within these units will most likely trigger the Tamper register. Mounting the units in this way will probably be causing additional false counts to be registered too.

It should be noted that any movement of the counter is a serious issue which may be generating additional false count increments to some, or all, enabled counting registers, as well as the Tamper register.

Always view the Tamper register in conjunction with the other enabled count registers.

The Tamper Detection functionality was added after a request through the Irisys partner ‘Voice of the Customer’ program.

6.18 View Menu

The View menu allows you to see other information accessible from the counter.

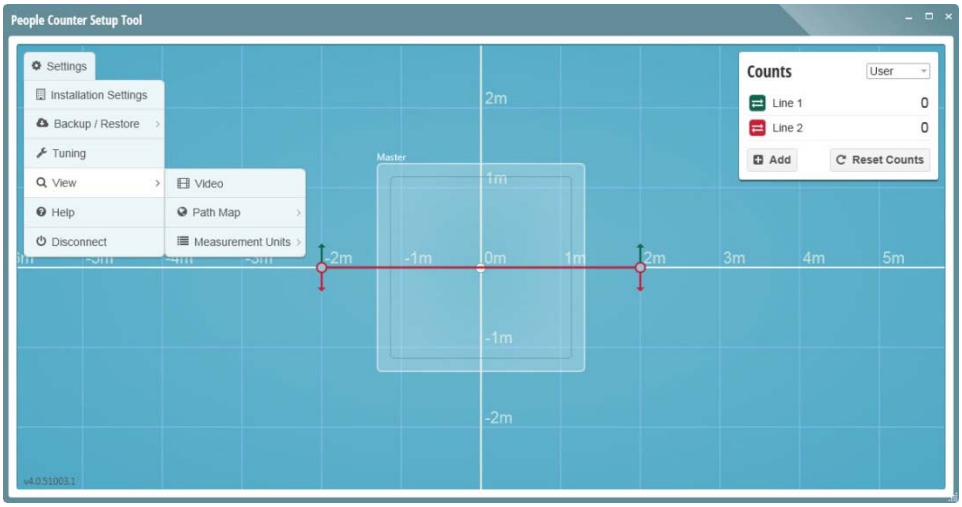


Figure 6.18.1

6.18.1 Video view

If the counter is a Dualview variant with integrated video camera then selecting the Video option will show this view:

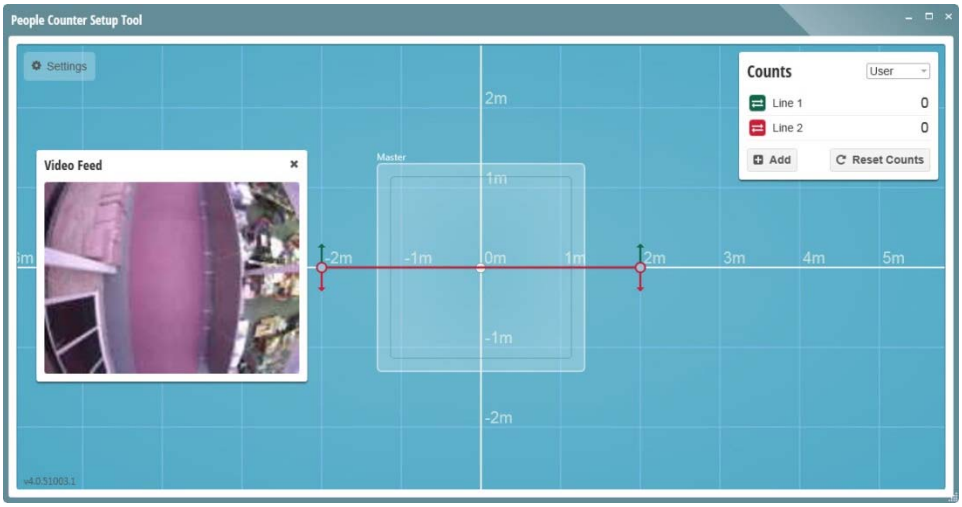


Figure 6.18.2

The video display is overlaid on top of the ground plane and this window can be moved around as required.

> The ‘Video’ option on the View menu is only available when connected to a dual view variant counter.

You can remove the overlaid video view by clicking the ‘x’ in the top right of the Video window.

6.18.2 **Path Map view**

You can enable an overlaid ‘path map’ view on top of the ground plane view by selecting enable under the Path Map option:

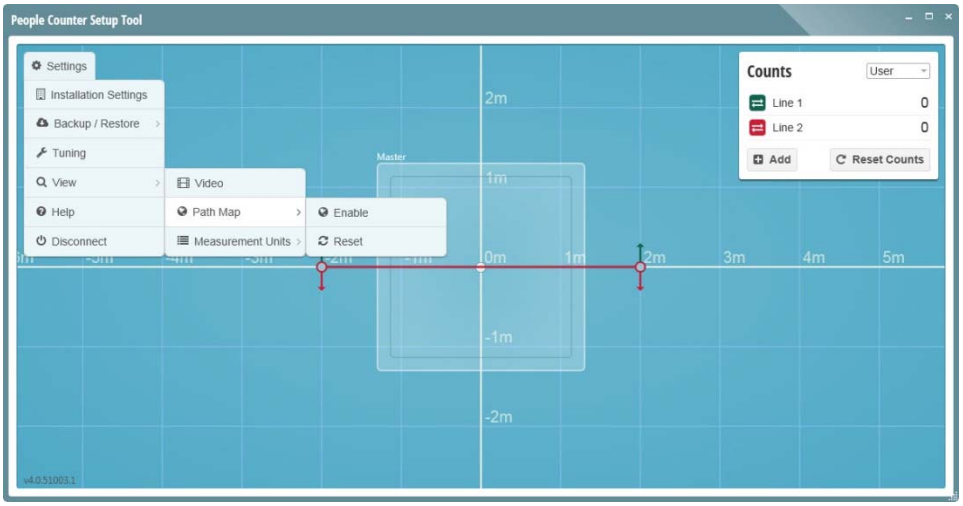


Figure 6.18.3

Once enabled the path map information will be retrieved from the counter(s):

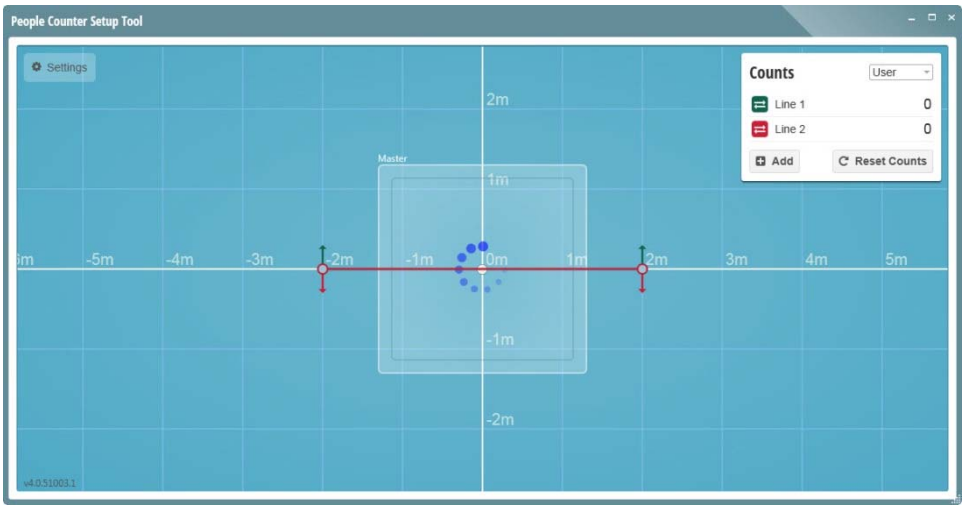


Figure 6.18.4

This will take a few seconds for each connected counter.

Retrieving the path map information will take between two and ten seconds depending on how many counters are connected, and connection stability.

When enabled, the path map information overlay is constantly updated every few seconds from all units.

Once the Path map data has been retrieved it will be overlaid on top of the ground plane view:

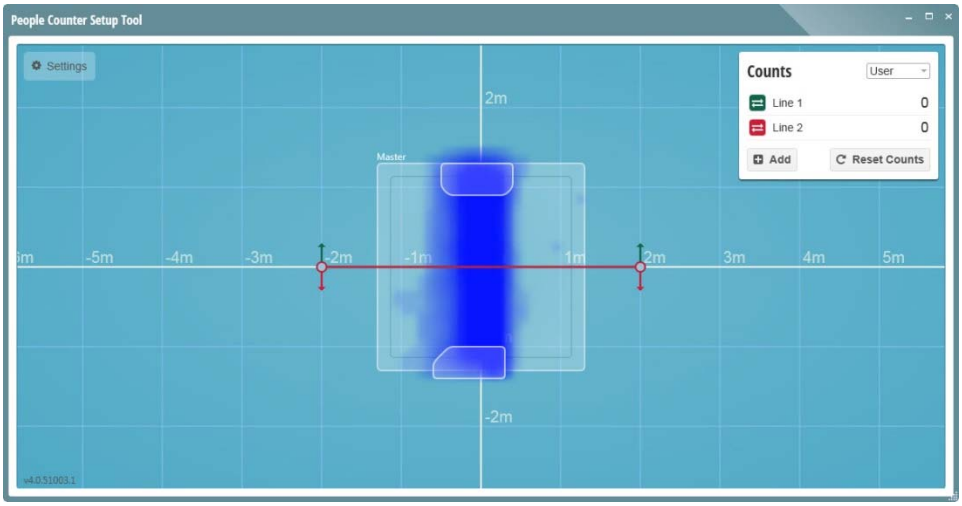


Figure 6.18.5

The dark blue band shown down the middle of the counter's field of view shows where people have been walking through the area (this counter is mounted over a corridor). The two light blue areas on the top and bottom of the field of view are the parts of the ground plane where people are largely being initialized. In a corridor situation it is logical to expect people to be initialised on the edges of the field of view as they enter it. Only if part of the field of view were obscured – for example if mounted too close to a door – would the initialisation areas *not* be at the edges.

If people start moving differently through the field of view, for example, to go around a new obstacle, the path map will adapt to show the new tracks, with the old tracks slowly fading away.

On wide opening networks of counters a very detailed view of people's tracks through the area can be revealed:

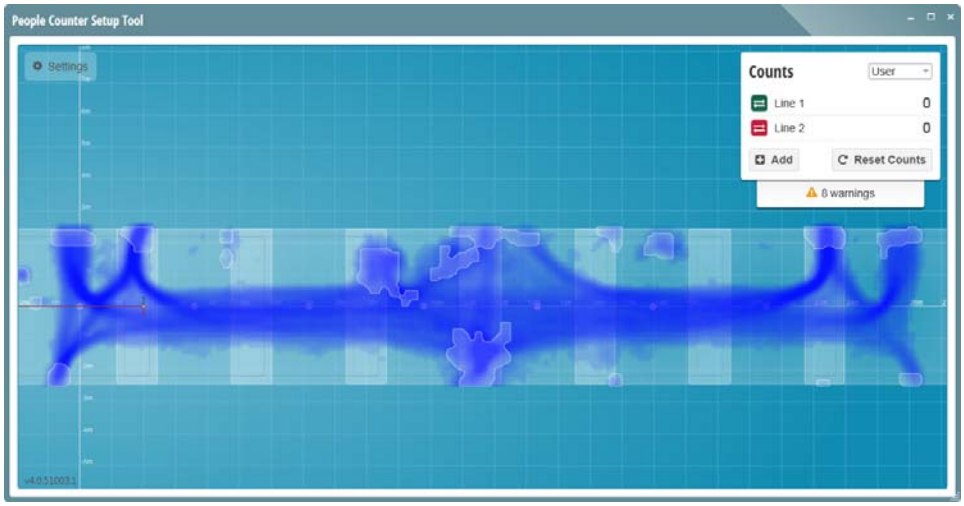


Figure 6.18.6

To clear the existing path map data and start logging again, select the Path Map 'Reset' option shown in Figure 6.18.3.

6.18.3 **Measurement Units**

You can easily switch between Metric and Imperial measurements by choosing the appropriate one from the View menu:

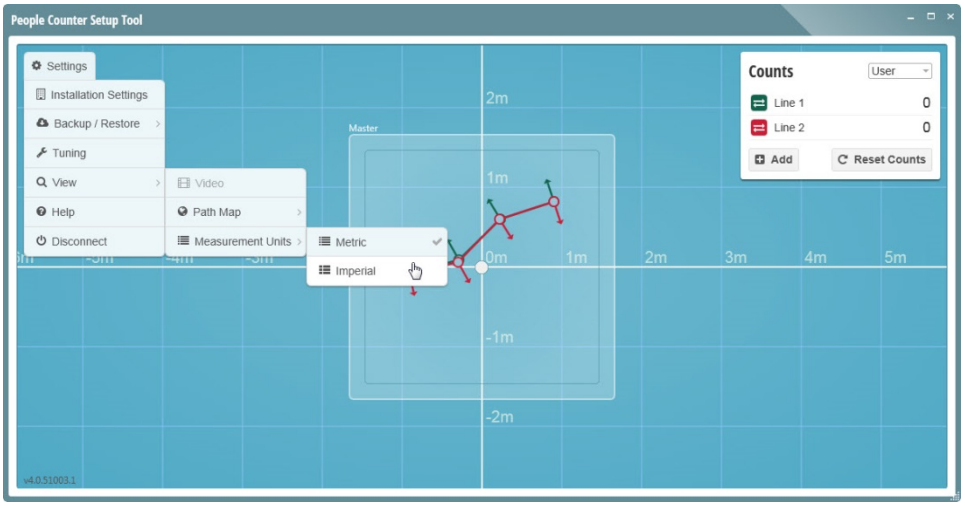


Figure 6.18.7

6.19 Advanced Counting logic

The count lines and count registers are effectively decoupled to facilitate CAN I/O and count logic support. Having lines and registers decoupled allows a single line to add to (or subtract from, or otherwise affect) multiple count totals, held in multiple count registers. It also allows multiple lines to affect a single count total.

Additionally when using the Gazelle series units or the optional Irisys CAN I/O module, external inputs can feed into their own count registers.

Essentially a count register can be configured to hold the following types of values:

1. **Basic Line Crossing Count Register**: This type of count register is associated with a single count line and records crossings of that line. A brand new counter is configured with two of this type of register by default (line 1 and line 2).
2. **Sequential Line Crossing Count Register**: This type of count register is associated with two or more count lines, L1 to LN, (up to a maximum of 8), and is incremented if a target crosses all of the lines in the configured order sequence. All lines must all be configured in an immediate count mode to qualify for use in this function.
3. **Alternative Line Crossing Count Register**: This type of count register is associated with two or more count lines, L1 to LN, (up to a maximum of 8), and is incremented if a target crosses at least one (any) of the lines.
4. **Summation Count Register**: This type of count register is associated with two or more other count registers, C1 to CN, (up to a maximum of 8), and is incremented by each increment to count registers C1 to CN. For each associated count register, increments can be configured to be either positive or negative to facilitate both addition and subtraction.
5. **Basic Pulse Count Register**: This type of count register is associated with an input channel, either internally or on a remote CAN I/O module. Any pulses on that channel are counted. See section 6.20 for details of adding inputs from external sources.

On very old 3000 series units a firmware update may be required in order to enable the advanced count logic – available from the Irisys Partner Portal.

There can be up to 16 count lines and up to 32 count registers enabled as part of the advanced counting functionality.

To add a register click the '+ Add' button on the counts dialog:

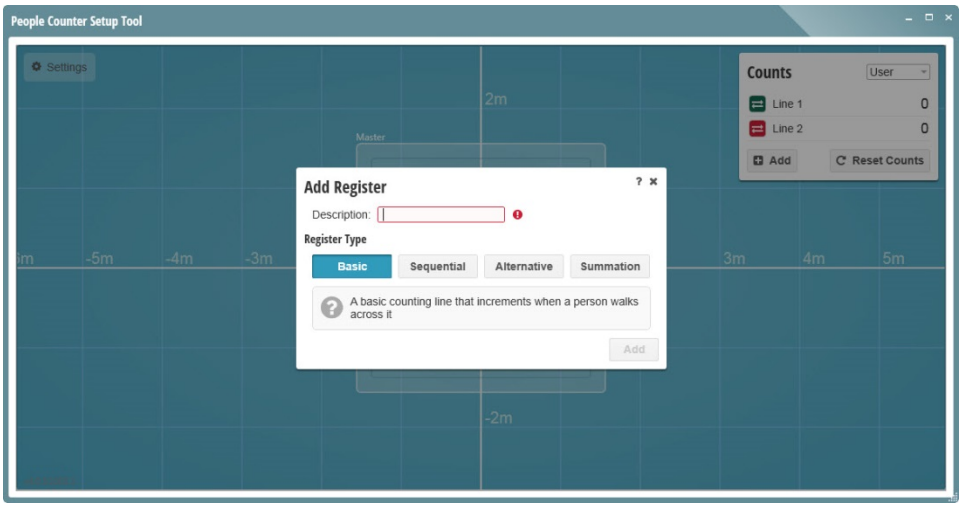


Figure 6.19.1

6.19.1 **Basic Line Crossing Register**

The basic line crossing functionality is, and always has been, the basis of how the Irisys people counter operates. The basic line function is also the starting point for the other advanced counting functions.

By default, a new counter will have two counting lines each associated with their own basic line crossing count register. As a target crosses each line (and in accordance with the configured count mode), the corresponding count register increments.

Whenever you add a basic line crossing register, a corresponding count line is also added; this is discussed in section 6.8.2.

The count register total can be used for simple logging of data to indicate number of people IN or OUT of a building, or other doorways/corridors/etc., or for measuring flows around a building, for example. Additionally the register and/or count line can also be used in the other functionality.

The selected count mode for each line will affect when the count increment is given. It could be given immediately when the line has been crossed (Immediate Count Mode), or could be given only when the target leaves the field of view (Deferred Count Mode), see section 6.10.1 for details of the available count modes.

6.19.2 **Sequential Line Crossing Register**

This type of register uses between two and eight count lines as part of its functionality. The lines must be added and positioned in a suitable location on the ground plane view, and then be associated with the register in the required order. The register will only increment if the lines are crossed in the correct sequence as configured. The register will increment by one only regardless of the number of count lines crossed as required in the configuration.

Only lines configured with an immediate count mode can be used as part of this functionality, if there are less than 2 lines available then you will not be able to continue with the addition of a Sequential count register:

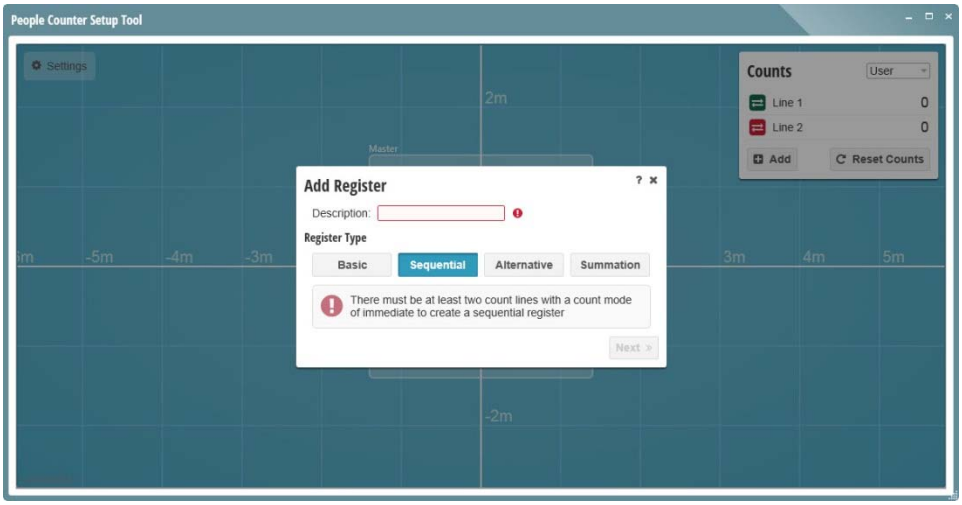


Figure 6.19.2

> Count lines must be configured with the 'Immediate' count mode in order to be used with a Sequential Line Crossing register.

Assuming that enough lines are available which are configured with an immediate count mode, you will be able to create the register:

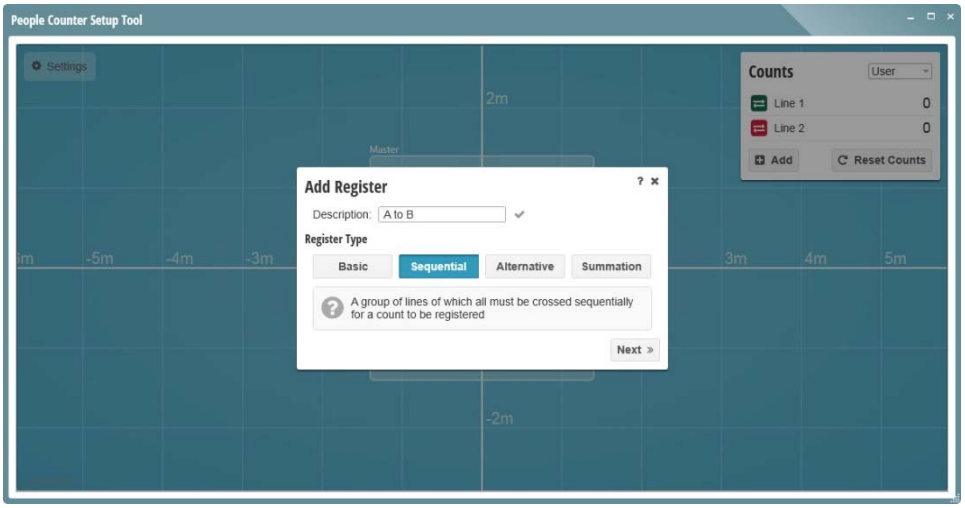


Figure 6.19.3

Click ‘Next’ to show the line configuration page:

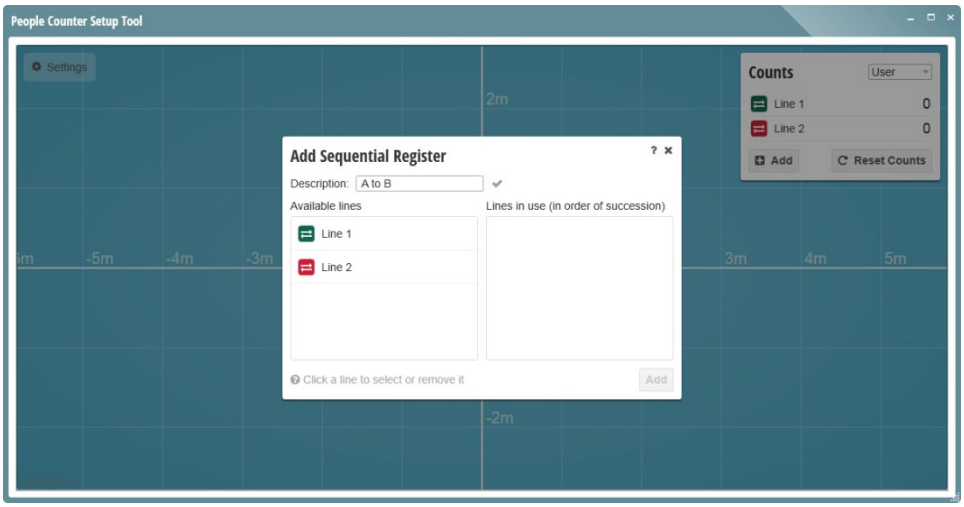


Figure 6.19.4

Remember that only lines configured with the Immediate count mode will be available for use with this register type.

Click on each line to move it from the ‘Available lines’ window to the ‘Lines in use’ window. To remove a line from the ‘Lines in use’ window simply click it again.

Remember that the lines should be configured in the order in which you want to monitor. The two arrangements below are very different:

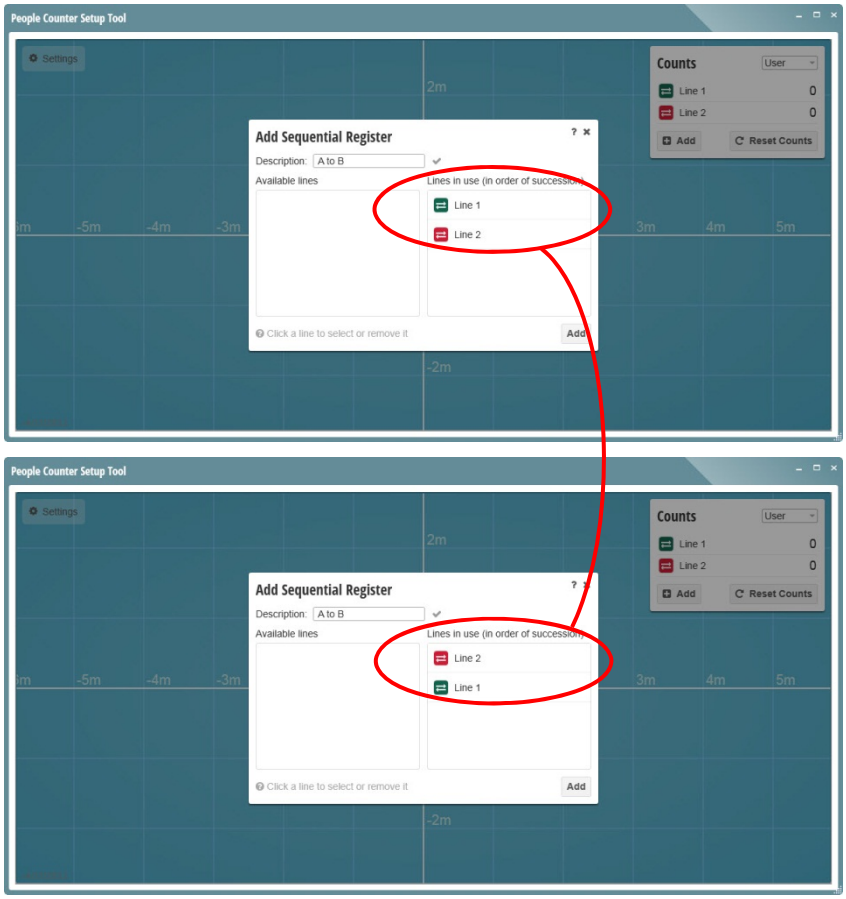


Figure 6.19.5

Remember also that the positioning of the lines associated with a sequential register must also be considered, as incorrect positioning of the lines may make the required crossing sequence impossible and so this register will never increment.

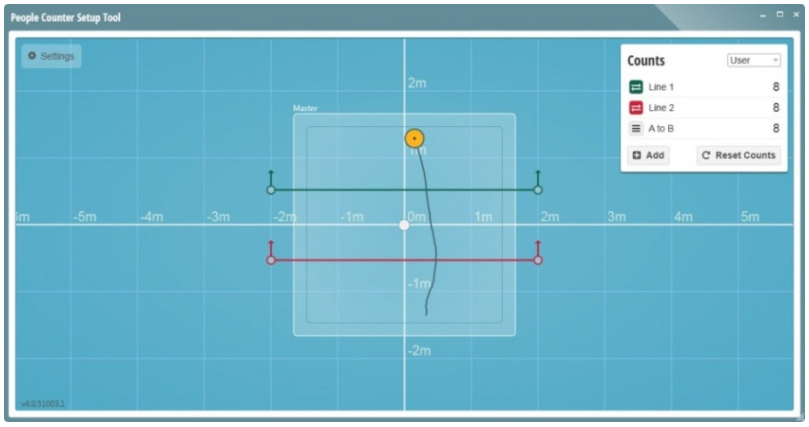


Figure 6.19.6

A common application of the sequential line crossing functionality is to see where people go. In the below example lines 1 and 2 are being used for regular ‘IN’ and ‘OUT’ counting through an entrance.

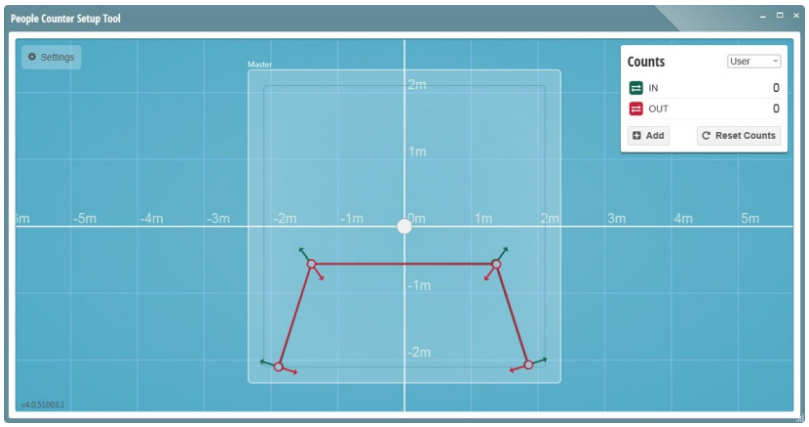


Figure 6.19.7

A third line is also added and placed in the same location as the ‘IN’ line, but with immediate count mode enabled, in order to be used as part of the sequential line crossing register. This allows the main IN line to stay in the default deferred count mode, which is usually preferred and recommended for the majority of typical people counter applications.

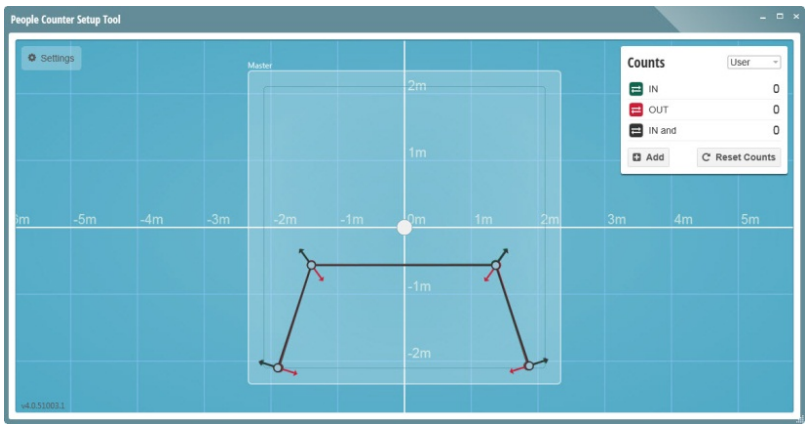


Figure 6.19.8

Figure 6.19.9

A further two lines are then added at different locations of interest (maybe a specific display or product promotion for example). These must also be configured with the Immediate Count mode:

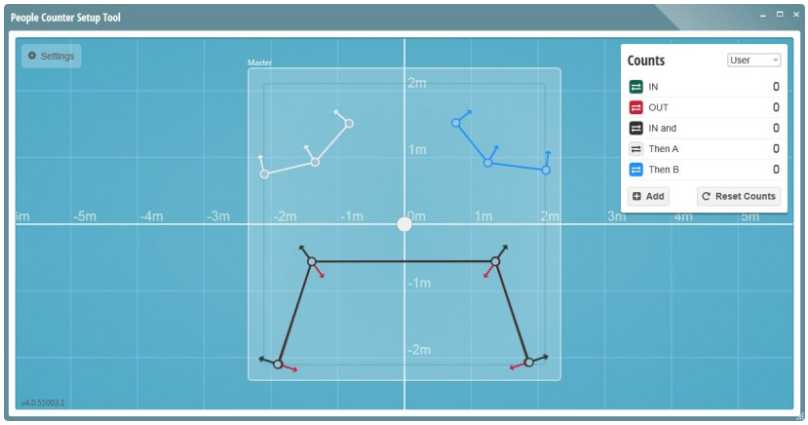


Figure 6.19.10

Then by adding two sequential registers we can see who comes in and goes straight to either of the displays:

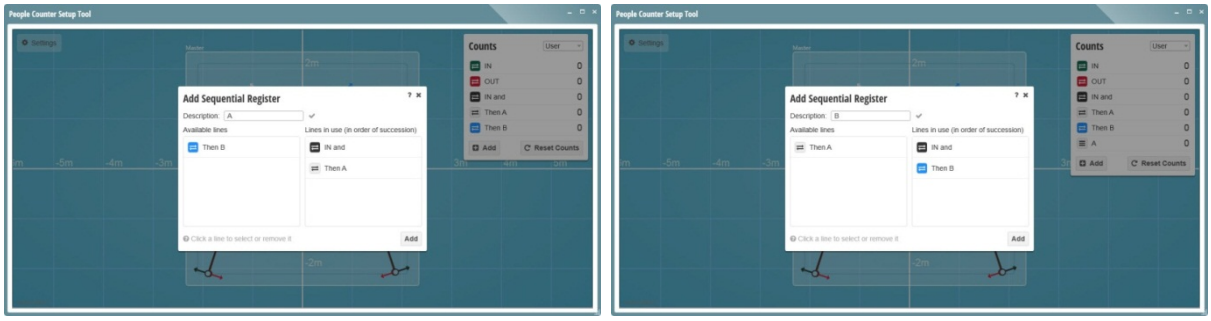


Figure 6.19.11

We now have our sequential registers setup correctly:

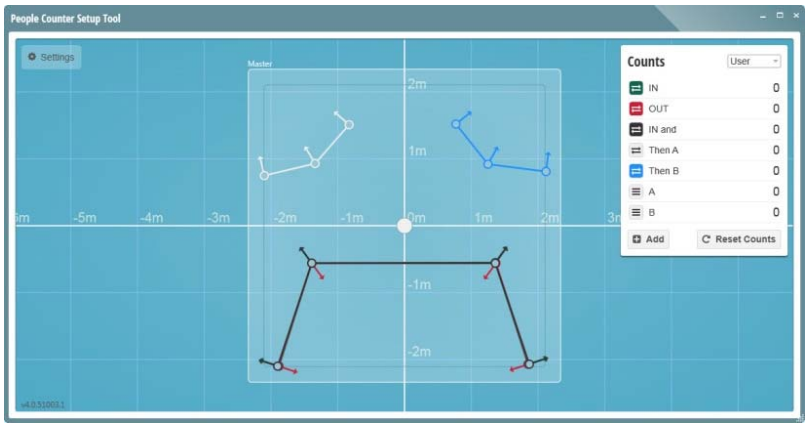


Figure 6.19.12

The last thing to do is to remove the unnecessary intermediate registers that were added as part of the sequential register setup. These are not used by themselves and will just take up space in the logs so it makes sense to remove them. To do this just hover the mouse over the register and click the X:

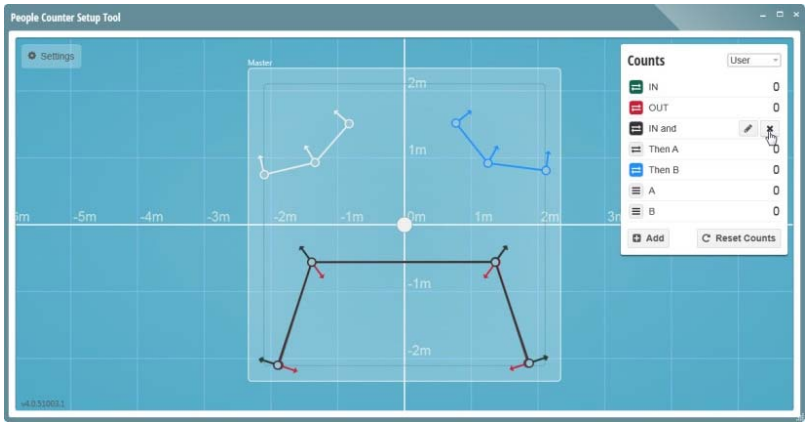


Figure 6.19.13

Once the three unnecessary registers are removed we are left with the core IN and OUT, and ‘A’ and ‘B’ registers:

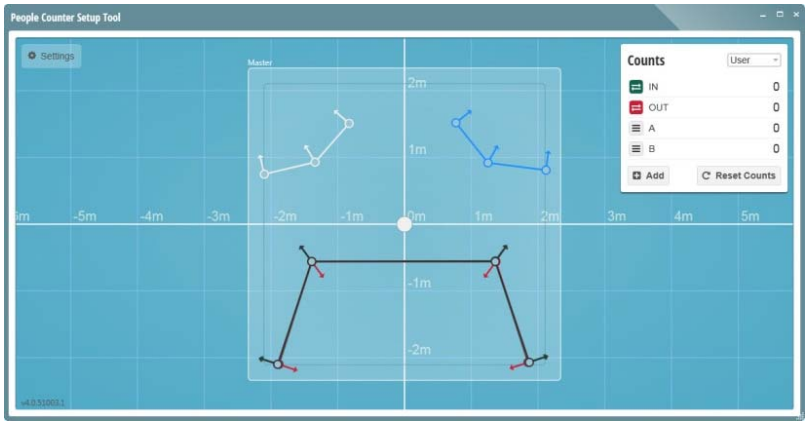


Figure 6.19.14

Remember that deleting a Basic Line Crossing Register does not delete the line as well. The line can continue to be used with other registers.

Now, when someone walks IN and goes to the first product in the store, product A, the ‘A’ register increments:

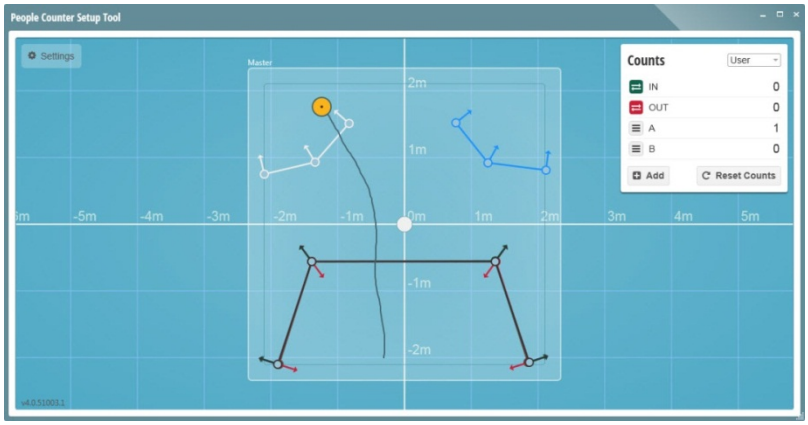


Figure 6.19.15

Remember that the main IN count line is configured with Deferred count mode, so this one increments after the person has left the field of view:

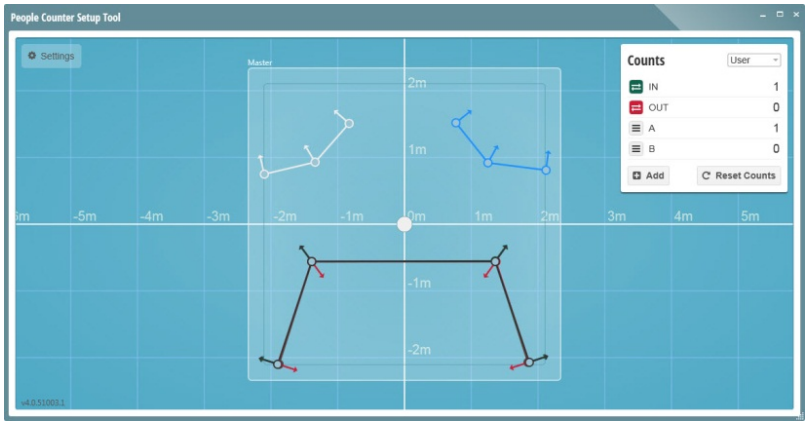


Figure 6.19.16

Additionally, when someone walks IN and goes to product B, the ‘B’ register increments:

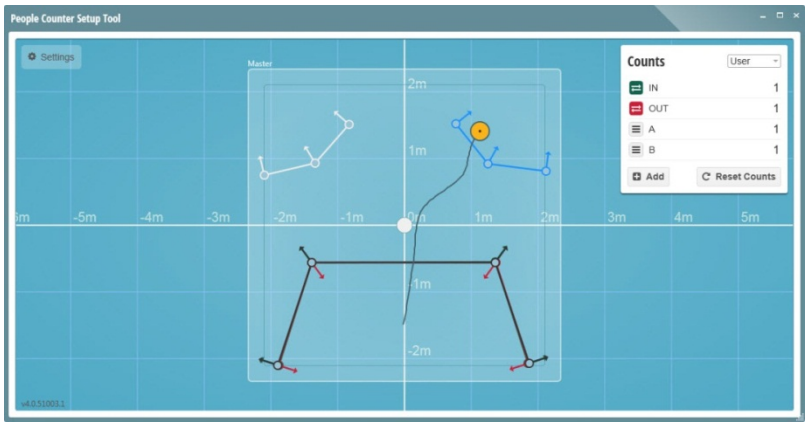


Figure 6.19.17

6.19.3 Alternative Line Crossing Register

This type of register uses between two and eight count lines as part of its functionality. The lines must be added and positioned in any required location and then associated with the register. The register will increment if any of the associated lines are crossed, but a single target will only cause the register to increment by one regardless of the number of count lines it crossed.

This type of register can be thought of as being similar to a logic ‘OR’ gate function.

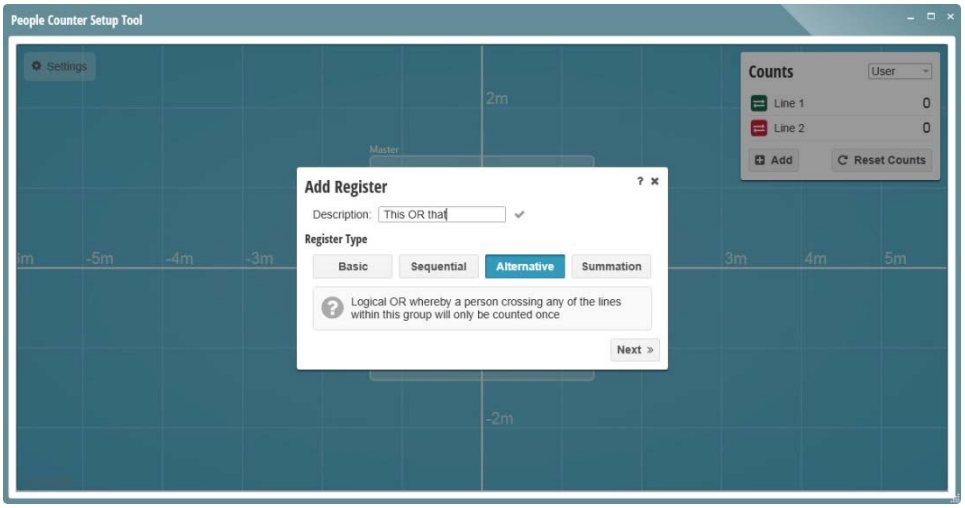


Figure 6.19.18

Click ‘Next’ to show the line configuration page:

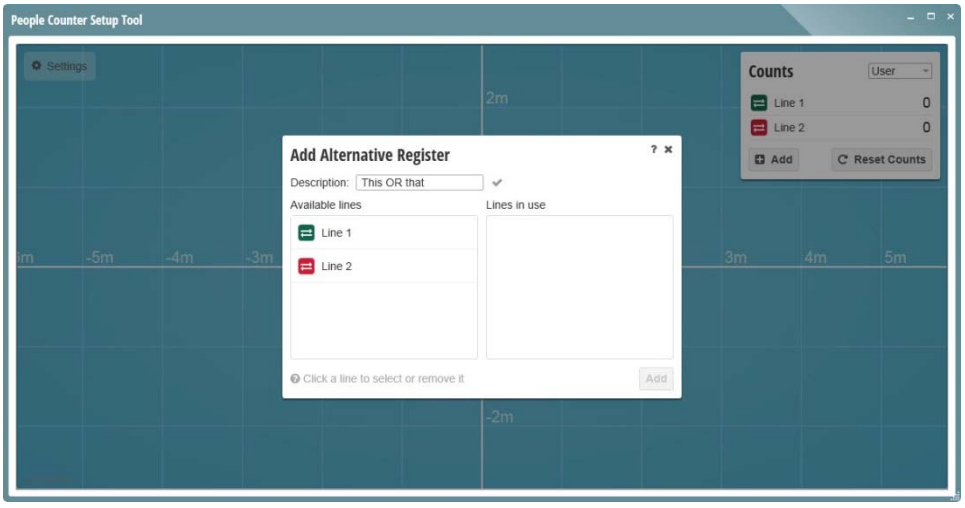


Figure 6.19.19

Click on each line to move it from the ‘Available lines’ window to the ‘Lines in use’ window. To remove a line from the ‘Lines in use’ window simply click it again.

> Count lines can be configured with any count mode and be used with an Alternative Line Crossing register.

Because the register will increment by one if any of the lines associated with it are crossed, the order in which they are added to the ‘Lines in use’ does not matter.

The two setups below are effectively identical:

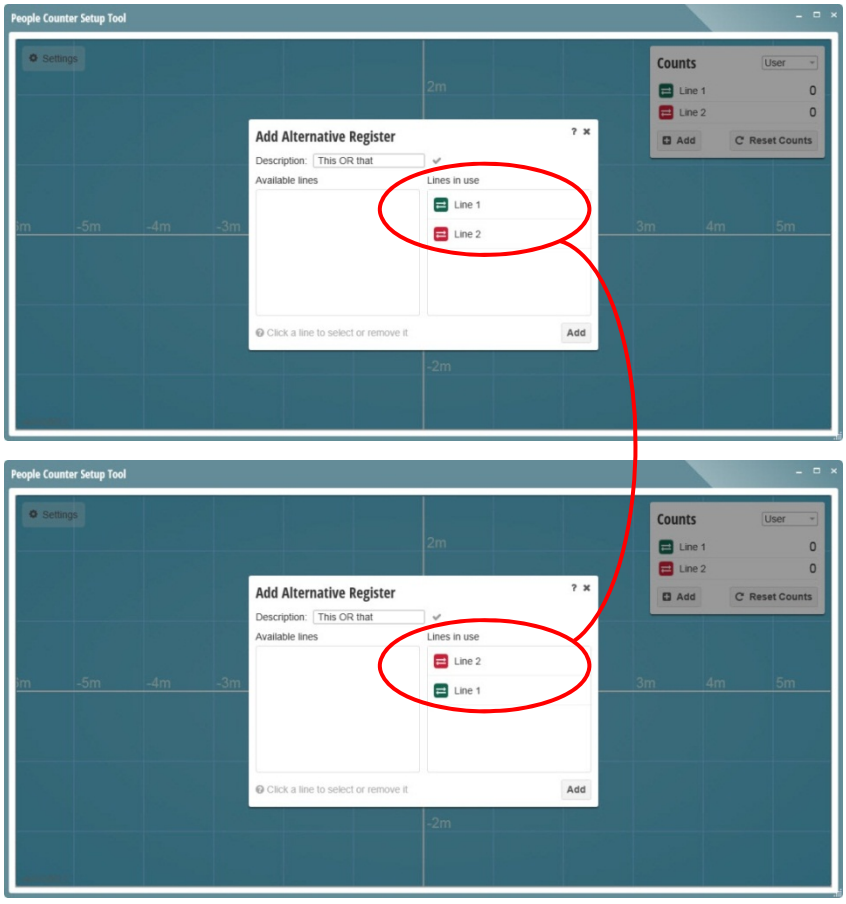


Figure 6.19.20

6.19.4 **Summation Register**

This type of register uses between two and eight other count registers - not count lines - as part of its functionality. The registers used can be simple Basic Line Crossing Registers or another advanced register type (Sequential, Alternative or another Summation register). The register will add or subtract (as configured) each individual count register total from the Summation Registers total value.

Care should obviously be taken to ensure that the registers used are themselves configured correctly, especially when using the subtract function, as it is possible to go into negative values in some cases.

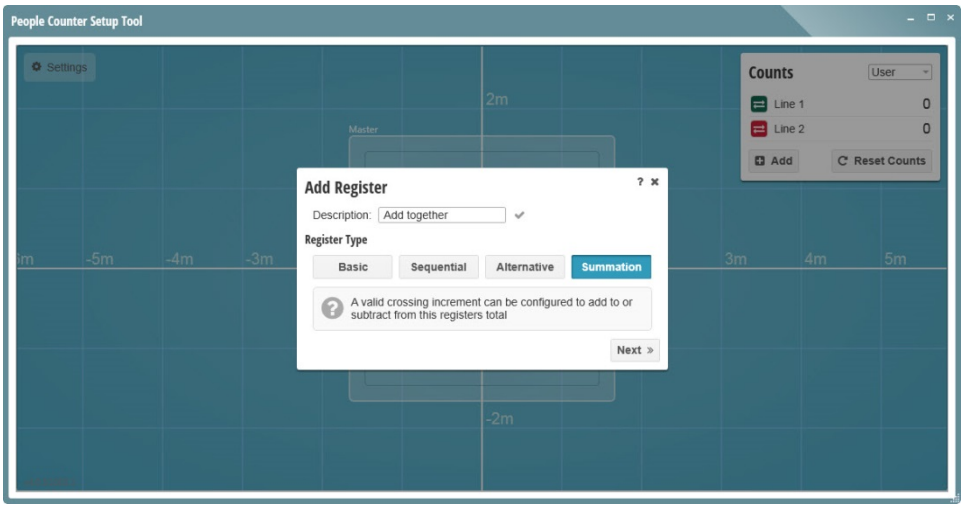


Figure 6.19.21

Click ‘Next’ to show the register configuration page:

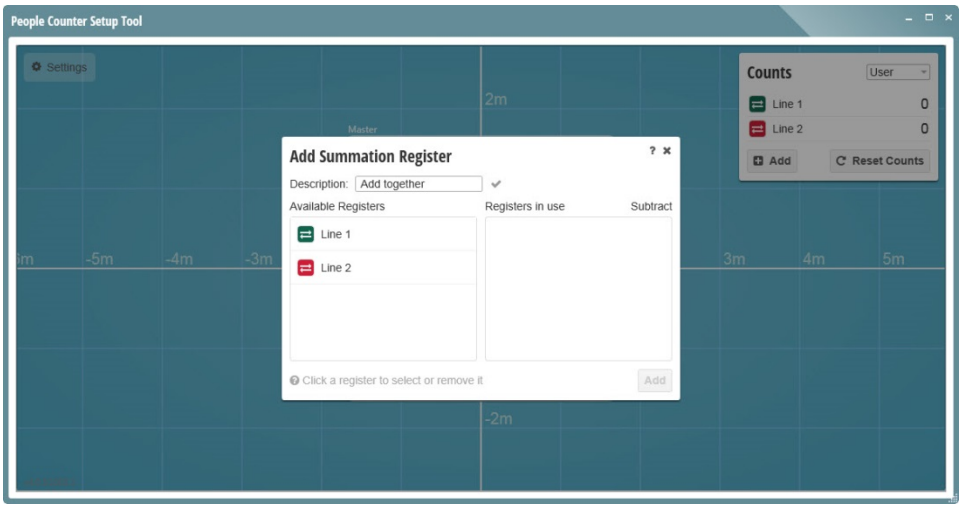


Figure 6.19.22

Click on each register to move it from the ‘Available Registers’ window to the ‘Registers in use’ window.

To remove a line from the ‘Registers in use’ window simply click it again.

In the example below, the register entitled ‘Add together’ will hold the totals from the Line 1 register and Line 2 register, added together:

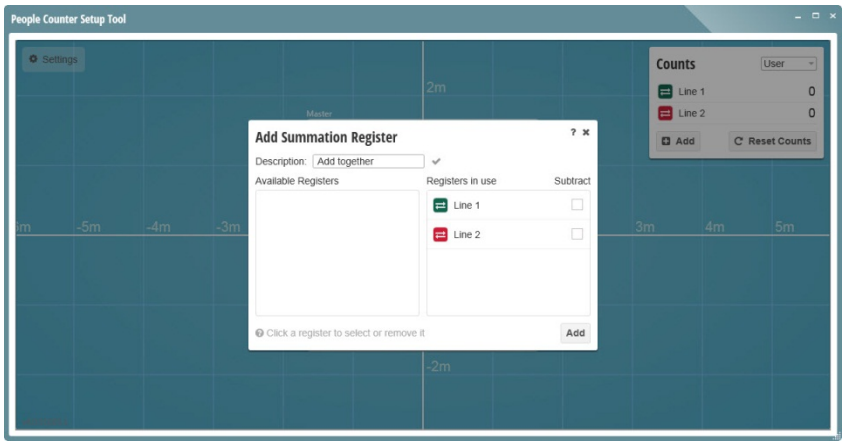


Figure 6.19.23

Below you can see the additional register. Note the symbol used for a Summation register is a + (plus) sign:

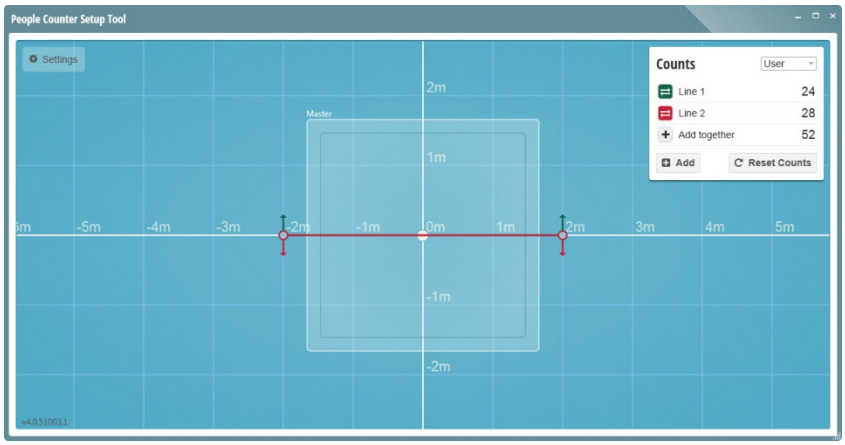


Figure 6.19.24

In the above example, the Line 1 register is being added to the line 2 register.

In the example below, the total held in the ‘Line 2’ register is subtracted from the total held in the ‘Line 1’ register and the result is stored in the ‘Subtract’ register:

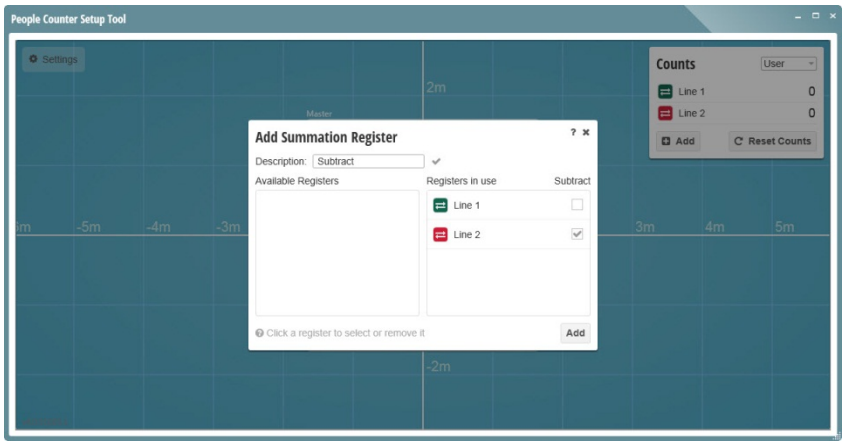


Figure 6.19.25

...And here is the resultant Summation register in operation:

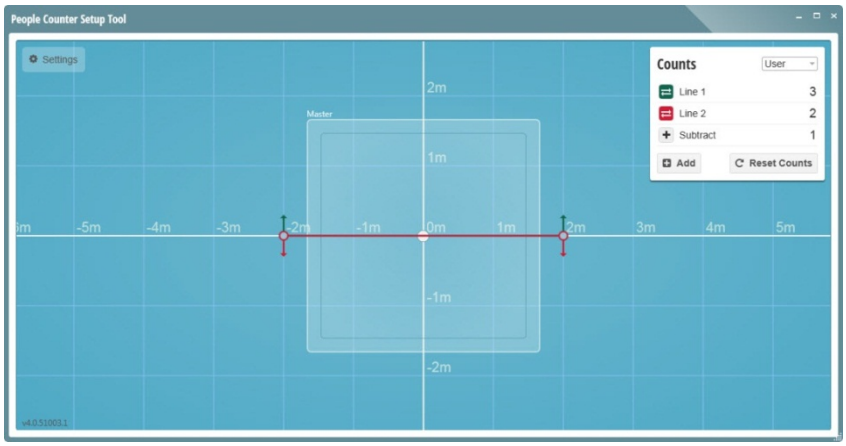


Figure 6.19.26

As you can see, it is possible for registers to go into negative figures.

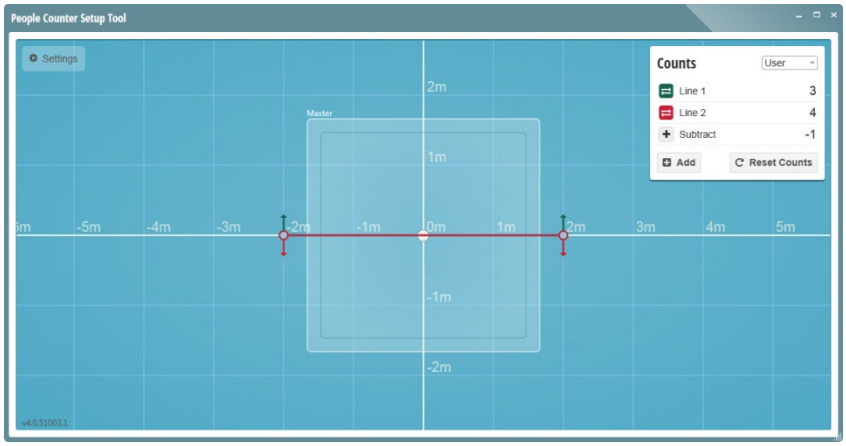


Figure 6.19.27

6.20 Relay Configuration

For details of configuring any available relay outputs, see section 6.13, “Input / Output Settings”.

6.21 Default

Default unit button in PCST not yet implemented.

6.22 Disconnecting

When a counter, or counter network, is configured, you can simply close your Internet Browser and disconnect from the network. Unlike older generation PCST versions, every setting you make is immediately saved to the counter so there is no need to choose a specific ‘Save settings’ option. It is however recommended that you do make a backup file of the counter settings on your laptop before you disconnect, see section 6.14.1 for more details.

When using the installed ‘exe’ version of the PCST software you can choose the Disconnect option from the main menu and this will take you back to the connection screen in order to connect to another unit:

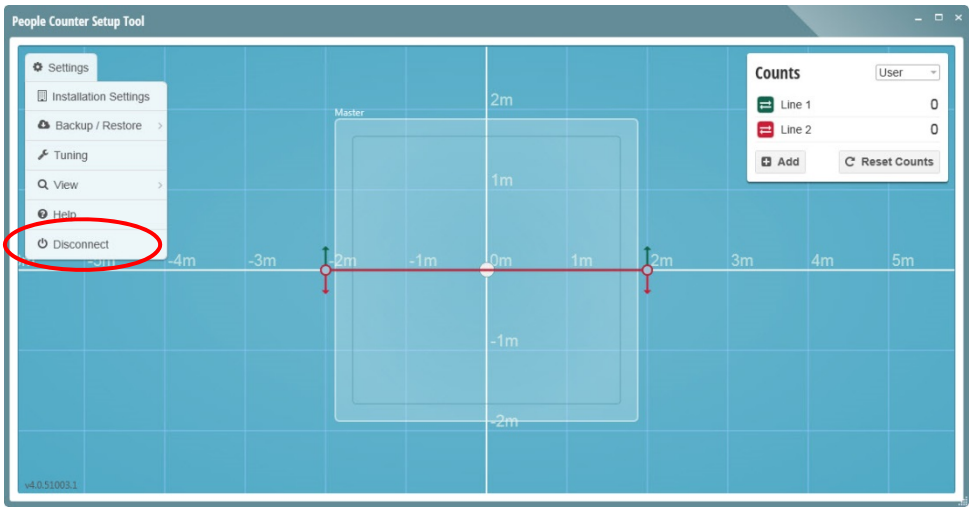


Figure 6.22.1

7 F.A.Q.

Q. What is the default IP address of a new IP enabled counter?
A. The default address, as set by the factory, is 192.168.0.10, with a subnet mask of 255.255.255.0.

Q. What are the default browser login details for an IP enabled counter?
A. The default username is admin, and the default password is installer.

Q. Someone has changed the IP address of an IP enabled unit and now I don't know what it is. How do I find it out?
A. You have one or two choices dependant on counter variant. Firstly, you can connect to the counter using the serial cable and the installed version of PCST, and reset the IP address to what you want it to be that way, see section 2.6.3 for details. Alternatively, for Gazelle units only, you can temporarily reset the IP address to the default 192.168.0.10, connect to the counter over IP, and then change it that way.

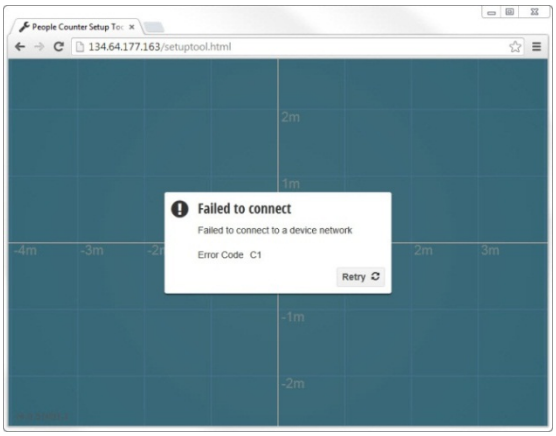
Q. How do I temporarily reset the IP address back to the known default address?
A. Remember that this only works on Gazelle units, so for 3000 series units you must connect to the unit via serial and reset the address that way. Remove the Gazelle's front cover if present, and locate the two red and green LEDs on the front of the counter - in-between them you will see a small hole. Inside that hole is a reset button. Make sure that the counter is powered up and watch the two LEDs as you press and hold down the button using a paper clip or thin screwdriver. After only about 1 second, the LEDs will flash alternately and you should release the button. All of the IP settings will now be reset to the factory details. Take care not to hold the switch down for longer as this will default all settings! If you reboot the counter it will go back to its original IP settings before you pressed the reset button.

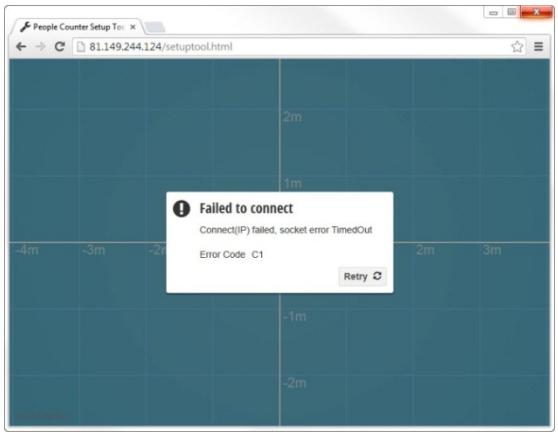
Q. I have changed the password of an IP enabled unit and now can't remember what it is. How do I find it out?
A. As with forgetting the IP address, you have two choices; either connect to the counter using the serial cable and the installed version of PCST and reset the password that way, or, with Gazelle units, you can use the reset button as above, which will not only reset the IP address details to default but it will also reset the password to default.

Q. What is the baud rate of the IP connection (the speed) for IP enabled units?
A. This is auto configured by the counter. A 3000 series IP counter will attempt to connect at 10Mbs first and then 100Mbs if that fails. A Gazelle unit does not have a preferred connection speed. In all cases, if you have a managed switch, it is recommended to leave the ports set to auto-negotiate and not fix them to a particular speed.

Q. When I connect to a unit over IP, I can get to the Welcome page but cannot get a connection through the Setup Tool option. Why not?

A. You will normally receive an error message that will point to the problem.





Remember that this part of the setup tool requires Silverlight as well as port 4505 to be available. Note also that you cannot port forward Silverlight so if you need to employ port forwarding then you must use the exe version of PCST. So if you have any issues like this, try using the installed version of the PCST software to see if that works in order to rule out a Silverlight or port 4505 issue. Also check that someone is not already connected to the counter. Gazelle units will support up to four simultaneous connections, but 3000 series units only support a single connection.

Q. I've tried all the above connection problem suggestions but to no avail. I can connect to the Welcome page, but not the Setup Tool, when I try I get a prompt to download a file and it won't work. Help!?

A. This could be because you have a 'download manager' installed on your computer which is grabbing the Silverlight 'asset' download and trying to manage it for you. Most download managers will allow you to cancel the download and it will be passed back to your browser to manage, and all should work. Some download manager software will still fail if you select the cancel option. In these cases you must temporarily disable auto download and try again. Select this and then refresh your browser, and it should work correctly.

Q. My Internet Browser won't connect at all but it was working previously, what's changed?

A. This could be a network issue or a problem with your Internet settings. Firstly, make sure that the counter is powered up and connected correctly. If you are connected directly to a 3000 series IP counter, and not via a hub/switch, then you may need a crossover Ethernet cable (Gazelle IP units will auto crossover). Next check your laptop IP settings – it needs to be on the same IP range as the counter. If you have changed the IP address of the counter, you may need to change your laptop's IP address also, so that it is on the new IP range. Lastly, you can clear your Internet browser history and settings which should fix most software problems. To do this in Internet Explorer; select 'Tools' from the menu, then 'Delete Browsing History', then 'Delete All', ensure the tick box is selected so that add-on settings are also deleted and click 'Yes'.

Q. I have a number of node counters connected to my IP master counter, but the Configuration Wizard always reports the wrong total number of units, why is this?

A. This can sometimes happen but is usually fixed by forcing another network scan. To do this power off and on again all the units and try again. If this does not work and the number of units is still reported as too few, then try the following:

a. Check the inter-connects between each unit; make sure that they are terminated correctly and are ‘straight through’ arrangement (not cross over cables), check each patch cable with an Ethernet cable tester.

b. Check to make sure that you are not exceeding the maximum number of units and/or cable length for the power supply.

c. If all else fails disconnect every unit so that only the IP master is connected. Configure this unit and then add the first node unit and reconfigure the network. Continue like this adding each unit separately until all units are configured. This may be necessary when there are lots of nodes, connected at the same time, all with default settings. It can also assist with locating a faulty patch cable.

Q. When I configure the X and Y positions of my master and node counters, the configuration wizard reports that the units are too far apart. What does it mean?

A. One of the checks that the wizard does is to make sure that units have a certain amount of overlap between neighbouring counters’ field of views. This is so that a person can be reliably tracked when they leave one counter’s field of view and cross into another’s, or if they walk between units – that person will always be seen by one of the units. If the wizard reports this problem, firstly confirm that you have entered the X and Y coordinates correctly. If the entered details correspond with the actual positions and it fails this test, then you will need to reposition the units closer together and re-configure. Always make sure you position units no further apart than indicated on the people counter Mounting Height Graph, to prevent this in future. Remember that this message is to be expected when configuring units on a disjointed wide opening network, see section 6.2 for details.

Q. What should I set the ‘Discrimination Sensitivity to?

A. This option allows you to configure the counter’s ability to differentiate between single people and couples. This is based on target size and shape. It is best to observe the field of view as people walk through it to determine whether the sensitivity should be lowered or raised. See section 6.16.1 for details.

Q. When should I disable ‘Large Target Couple Counting’?

A. This algorithm is incorporated to help prevent under counting which can occur when two people are seen as one target. This occurs at the higher mounting heights when the heat produced by two people merges into one target. It should only be disabled if it is deemed to be causing over counting. Try adjusting the ‘Discrimination Sensitivity’ first, as this may help. See section 6.16.2 for details.

Q. When should I enable ‘Extended Grouping’ mode?

A. In the vast majority of cases you will never enable this. If you enable it then lots of people walking close to each other will be grouped together and counted as one, only, which will result in huge under counting on regular people counting installations. Only enable it if you want to count groups rather than individuals, or possibly if supermarket carts/trolleys are prevalent and are causing over counting problems, but then, only enable it if adjusting the discrimination sensitivity slider and disabling Large Target Couple Counting does not fix the issue. Once enabled you must re-evaluate the discrimination sensitivity slider setting again. See section 6.16.3 for details.

Q. When should I enable the ‘Deferred Initialisation’ option?

A. When enabled this option adds an extra step to the initialisation of a target. It is intended to prevent ‘Ghost’ targets appearing when no one is in the field of view. This can happened when the ground temperature changes rapidly and the temperature change is seen by the counter, for example, when a cold wind blows through a door and cools down the floor temperature. It should only be switched on when this problem is observed. It should not be switched on when not required as genuine targets will take longer to initialise and could be not counted. See section 6.16.4 for details.

Q. Argh! The counter setup tool just crashed! What’s happened?

A. All software has bugs; if you find a bug please help us by sending the Crash report that is created following a software crash. This will help us improve the product and make it more reliable. Please be assured that no personal information is included in this report. Please email this file to counting.support@irisys.co.uk with any relevant details of the function you were performing just before the crash occurred.

Q. I need to install quite a few counters over a very wide entrance. What is the maximum number of counters that I can install?

A. Remember that any pillars, central displays or other obstacles can be utilised in order to ‘split’ the entrance into smaller separate entrances, which in some cases may be preferable. However, Irisys people counter networks can be created to handle large numbers of people in the field of view over very wide openings. The maximum number of units is 8, but remember that when using Dual View IP units that the video view will only encompass the equivalent of three thermal views and therefore to enable viewing and validation of the entrance it is recommended that only 3 units are used (a dual view unit in the middle of two node units). In all cases, make sure you do not exceed the additional power limits.

Q. I have finished installing some counters and everything seems to be configuring correctly, except that one of the counters is flashing its LEDs, why is this?

A. The counters will flash their LEDs to indicate various errors and conditions. To work out what is going on, look to see if the red LED is on permanently. If so then this indicates an error, with the green LED flash sequence denoting which error – see document IPU40185 (for 3000 series) or IPU40524 (for gazelle units) for details of error conditions.

Q. When configuring my firewall what ports do I need to allow through for the IP enabled counter to work correctly?

A. The counter needs up to three ports through your firewall – for configuration via IP you need port 80, for HTTP, and port 4505 for the Silverlight add-on and for the API in order to communicate with the counter and retrieve counts etc. If the counter is configured to use Client Connection mode, you will also need to make available the port that you specify that the counter should use, see section 5 for more details.

Q. Can I change the firewall ports required?

A. If you are configuring the counter to connect out to you then you can configure whatever port you want for connecting out (see section 5). For connecting into the counter, each port is fixed for HTTP, Silverlight and API. However, it is usually possible to configure 'port forwarding' through your router. See your network administrator for more information. But you must port forward 4505 to 4505.

Appendix A Counter Setup

When more than one counter is installed on the ceiling, at the same entrance/doorway, they must be positioned in such a way as to provide an overlap where the field of view of neighbouring counters meet on the ground. This enables the counters to recognise the same target as it moves from one counter's field of view to another's. In order for this to function correctly, the mounting separation shown on the mounting height graph should not be exceeded (see separate document IPU40188), also, all counters must also be installed in the same orientation (pointing in the same direction).

The tracking of targets in this way is handled automatically by the master counter. In order to do this you must specify the relative positions of each counter by entering their respective X and Y coordinates as part of the counter configuration process. If you have only one counter installed then you can leave the X and Y coordinates as default (0,0) but when two or more units are installed, you have to specify their positions. An example may be that the master is positioned with one unit immediately to its right, 2.2m away, and a further unit, on the right, another 2.2m beyond that. The X and Y coordinates of the three units would therefore be (0,0), (220,0) and (440,0). If they are not directly in line with each other, then you would need to specify the different Y values as well.

For more specific details on mounting locations, and counter installation – including providing enough overlap between units, see the separate documents; 'IPU 40530 Gazelle Quick Start Guide 60 degree' and 'IPU 40531 Gazelle Quick Start Guide 40 degree', as well as 'IPU 40520 Gazelle People Counter Installation Guide', 'IPU40184 People Counter Applications Notes', 'IPU40187 IP Counter Systems Guide' and 'IPU40188 Counter Mounting Height Graph'.

Note: When specifying X and Y coordinates, the X coordinate is relative to left and right and the Y coordinate is the same as forward and back. Also, it is easier to imagine looking down on the counters from above, rather than looking up at them, when working out the X and Y values.

Note: When specifying X and Y coordinates, all entries are in centimetres if Metric units is selected, or in Inches if Imperial units is selected. You can switch between Metric and Imperial using the main menu "Measurement Units" option, see section 6.18.3.

Appendix B IP Connection Problems

This section is intended to give pointers which should help you to diagnose problems which are preventing you from connecting to your IP enabled master unit via IP. Some of this guide is quite technical so you may need to seek further guidance from your IT department.

There are three types of connection issue:

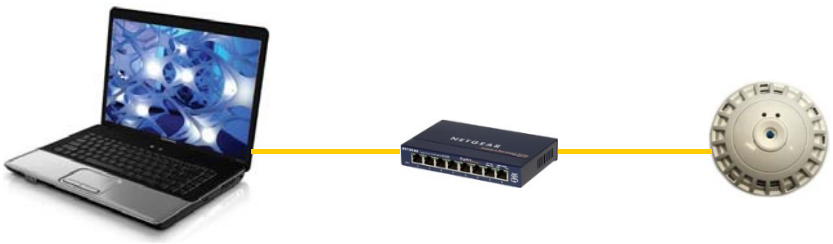
1. Cabling connection fault.
2. IP Settings problem.
3. Hardware fault.

Hopefully by running through all the issues relating to 1 and 2 from the list above we can rule out option 3.

The first thing to check is that everything is powered correctly. If you are using a network switch or hub then this too must be powered and switched on.

Next, check that you have a physical connection from your PC to the counter. Make sure all the cables are connected where they should be. You must make sure that you have the correct type of patch cable(s) between your laptop and the counter. The majority of patch cables will be of the 'straight through' type. But some patch cables will be 'Crossover' type cables which are wired differently. A Gazelle unit will 'auto-crossover' as required, but a 3000 series unit will not.

If you are connecting to the IP master through a hub or switch, then you must use two standard 'straight through' patch cables (one from laptop to network switch, one from switch to counter).



If you are connecting directly from your laptop to the IP master counter then you must use a 'crossover' type patch cable. Some laptops will 'auto-switch' internally if a straight through cable is used (check your laptops user manual for details), but to be sure, use a crossover cable.

Once everything is physically connected, you need to make sure that there is a network connection. There are two ways to do this. The easiest way is to simply to look at the LED indicators on your network equipment. Most laptops will have LEDs on or near the Ethernet port where you connected your patch

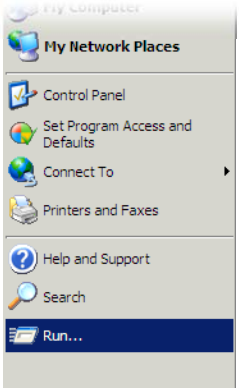
cable. Check these to make sure they are illuminated. If they are then it means the laptop is connected to 'something'. If you are connected directly to the counter via a crossover cable then the laptop is connected to the counter ok. If you are connected via a network switch or hub then this only proves the connection to the network switch or hub. So, in these cases, you must now look on the network switch for more LED indicators. You should see an illuminated LED for each connected port. You should therefore see illuminated LEDs for two ports – one for the connection to the laptop and one for connection to the counter. If you have other equipment connected to the hub then those LEDs may also be illuminated.

If the relevant ports used are not illuminated then this signifies a connection error of some type. Check again that the counter is powered correctly, and that the hub/switch is also powered. You should then check the cables that you are using to make sure that they are of the right type (see above) and are not damaged. Physical damage should be obvious but locating internal breaks and verifying the right type can usually only be done by using a patch cable tester. If everything is powered up correctly and the cables test out ok then you should try connecting to a different IP device as a final check. If you can connect through your network to the internet, for example, using the same cables and switch/hub then this would indicate a problem with the counter; in this case, you should connect to the counter using the serial/USB setup interface to verify that it is working correctly. If however, you cannot connect to anything else then this would indicate a problem with the cables and/or switch/hub.

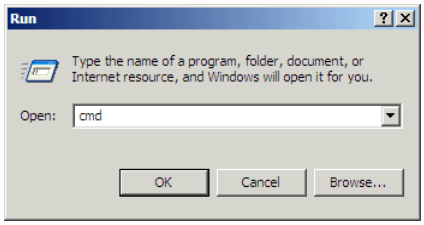
Once the hardware is confirmed as being connected and powered correctly, you can proceed with checking the connection via software. You can do this by using the network 'Ping' command from your laptop. To do this you must know the IP address of your counter.

From the Windows Start 

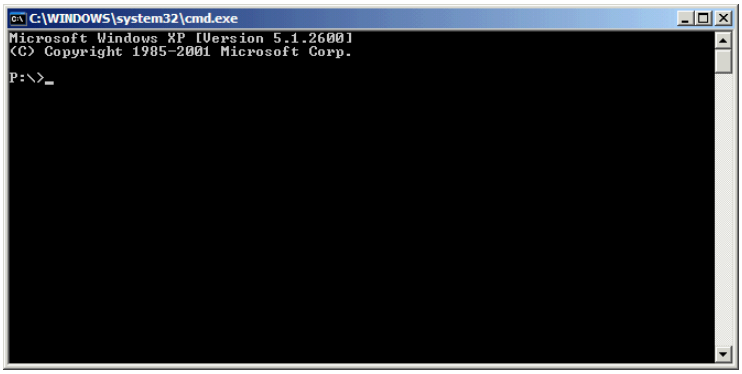
menu select the Run option…



Then in the window that appears, type 'cmd' and click 'OK'.



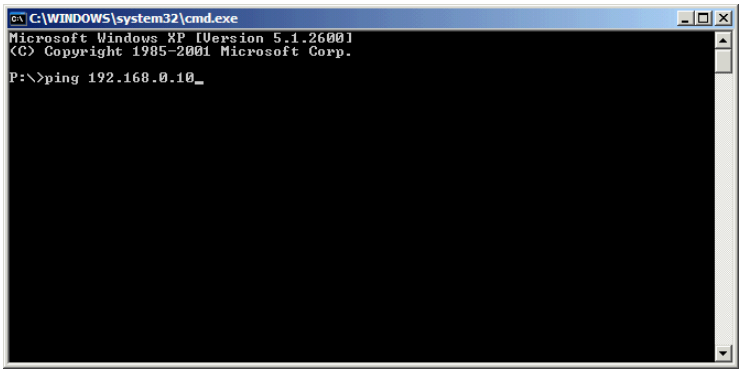
The command window will then open:



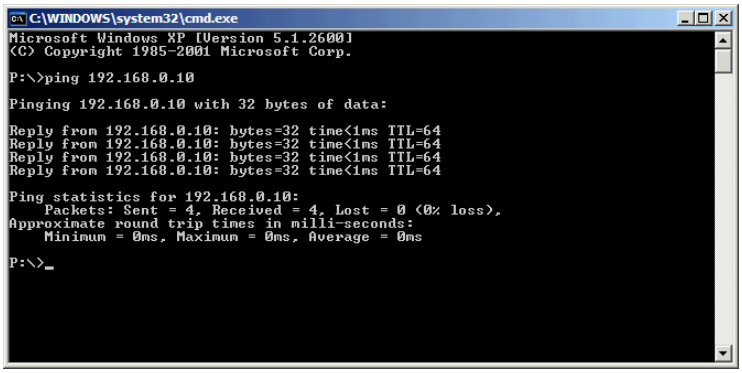
You can now type the Ping command in the format 'ping A.B.C.D' where A.B.C.D is the IP address of the counter. The default IP address of a counter is 192.168.0.10. Just type (if you have changed the IP address enter that instead):

Ping 192.168.0.10

(and press return)

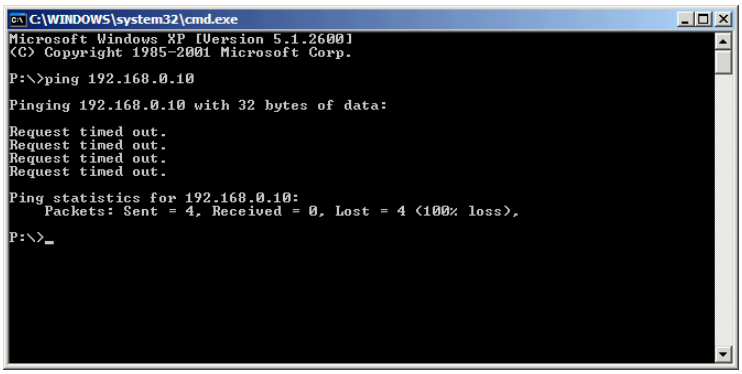


By default, the command will 'call' out to the IP address specified and wait for a reply. By default, it tries 4 times, and you should get 4 'Reply' messages as shown, below:



If you get Replies from the IP address then this confirms everything is working and you should therefore be able to connect to the counter through your Internet Browser without any problems. If you still can't get connected through your browser, try the exe installed version of PCST or refer to the FAQ section above – you may need to clear your cache settings and/or browsing history.

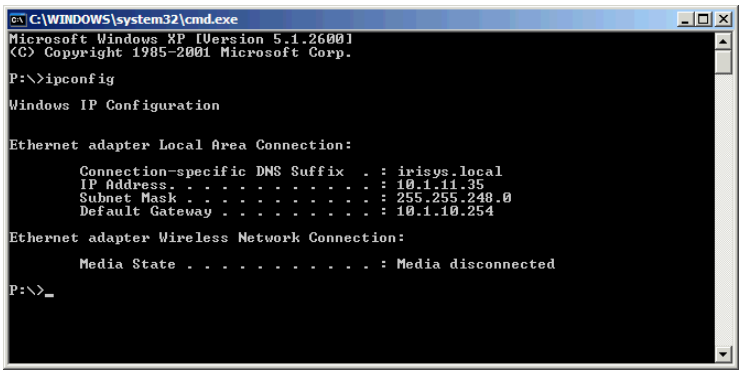
If you get 4 ‘time out’ errors then this means that a counter on that IP address did not respond within the allocated time (default is within 1 second) and could indicate a network problem or simply that the IP address is incorrect.



To verify the correct IP address you should connect via serial using the setup tool executable version, see section 2.6.3 for details of this.

After cable issues, the next reason for a ‘Ping’ command failing in this way is that the counter and laptop are on different IP ranges. The default IP settings for the counter, as set by the factory, are IP address 192.168.0.10, with a subnet mask of 255.255.255.0. Full details of how the IP address and subnet mask work, and relate to each other, is beyond the scope of this document. But, in the example above, the laptop would need to have an IP address of 192.168.0.X to be able to communicate correctly with a counter configured with this default configuration (where X is a value of 1 – 254 excluding 10).

To check your laptop’s IP address the easiest way is to type the command ‘ipconfig’ into the command window that you have already used above:

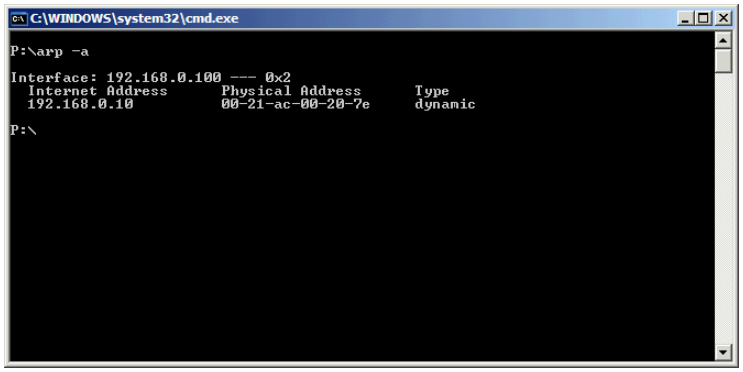


Your IP address and subnet mask, along with some other details, will be shown. Here you can see that the IP address is completely different from the counter’s default IP address. To allow a connection between the two, you would either change the laptop’s IP address to something like 192.168.0.11 (in this case), or change the counter’s IP address to something like 10.1.11.36 (again, in this case), via a serial connection. Note, you should also check to make sure any IP addresses selected are not already being used by other equipment on your network! The easiest way to do this is to ‘Ping’ the intended address (whilst the counter is powered off) to see if something else replies.

You should contact your network administrator or IT department for assistance with changing your laptop’s network details, but for changing the counter’s IP settings you can simply use the serial/USB connection and installed software, or temporarily reset the IP address to the factory default (Gazelle units only), see section 2.6.3 for more details.

If you are configuring a number of IP units with the same IP address then you could encounter another problem. As an example, you may have 2 brand new units, each with the default IP address of 192.168.0.10. Because of this, you must not connect both units to the network at the same time until they have unique IP addresses. As long as you follow the above advice, you should be able to connect to the first unit and configure a new IP address without too many issues. But when it comes to connecting and configuring the second unit, you could see a problem with it not being recognised at first. This is because of the way the IP address is associated with the device. All IP connected devices are assigned a MAC address when they are built in the factory (Irisys IP counters have this MAC address printed on a label inside the unit and it is displayed on the browser 'Welcome' page – see section 3.2). In theory, all MAC addresses are unique and you should never see two devices with the same MAC address; in this way, every network addressable device can be uniquely identifiable across the internet. The computer automatically associates the IP address with the MAC address using address resolution protocol (ARP).

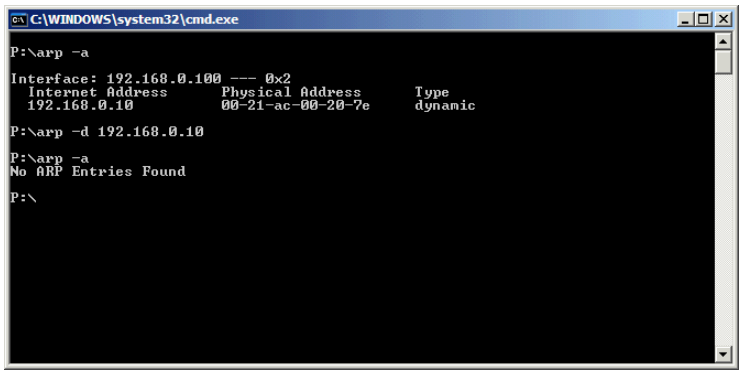
When you attempt to connect to an IP address, the MAC address associated with that IP address is determined and the connection is made. The details of IP and MAC addresses are held in the computer 'ARP' table. This can be looked at by using the 'arp' command, with the '-a' switch:



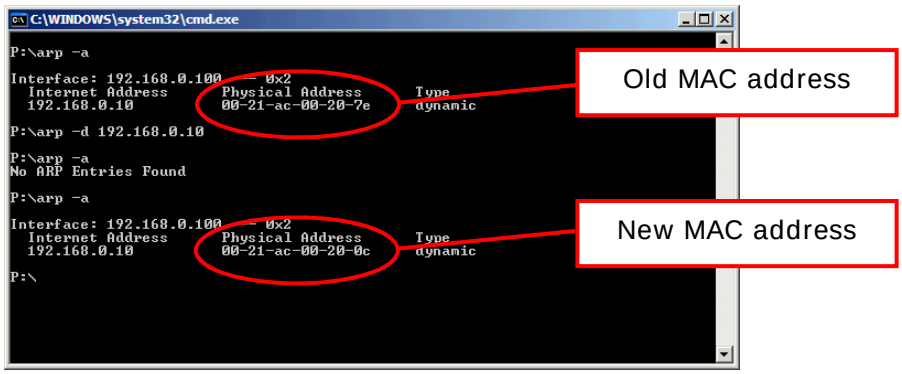
Any IP addresses previously connected to, and associated with, this computer, will be shown.

In this particular ARP table, above, we can see the IP address of the counter and its associated physical (MAC) address (you may have other entries too). This means that any new counter, with the same IP address, but a different MAC address, will not work correctly. To fix this issue you have to delete the existing entry from the ARP table so that it can be updated with the new MAC details. If you leave the counter disconnected for a while, the computer will eventually discard the ARP table entry anyway, but this may take anything from 2 minutes up to several hours, especially if there is other network equipment on route which must also discard the old details. Therefore, the best method is to manually delete the entry yourself.

To do this use the arp command again but this time with the –d switch and the IP address details:



If you now connect the second counter, and display the ARP table again, you will see that it is now populated with the new MAC address associated with that IP address:



The counter should now be seen via an Internet browser without any problems.

Appendix C Firmware Versions

Firmware is a term sometimes used to denote the fixed, usually rather small, programs that internally control various electronic devices. Like software, it is created from source code, but it is closely tied to the hardware it runs on. It is typically involved with very basic low-level operations in a device, without which the device would be completely non-functional.

Irisys counters utilise different types of firmware to run different parts of the counter.

Every counter runs processor firmware which handles the identification of valid targets and the tracking of them around the field of view. Updates in processor firmware typically improve the accuracy of the counting and may introduce additional benefits such as different count modes.

IP enabled counters also have two other firmwares to handle the IP connectivity and serve the setup tool web pages. Updates to the IP firmware typically add functionality which can be utilised via the API. Updates to the SetupTool typically add the ability to configure any extra functions added via the processor firmware and/or IP firmware.

Any Gazelle unit also runs an on-board version of Linux which can also be updated.

Firmware Versions:

Gazelle Firmware				
Description	**IP Firmware**	**Onboard SetupTool Version**	**Processor Firmware**	**Notes**
Gazelle Beta Firmware			42.4.1.523	
Gazelle First Release		4.0.60214.1	42.4.1.538	

3000 Series Firmware				
Description	**IP Firmware**	**Onboard SetupTool Version**	**Processor Firmware**	**Notes**
Beta Firmware	1.1.0.0	1.2.0.0	42.4.0.178	
Beta 2 Firmware	1.3.0.0	1.5.0.0	42.4.0.207	
RELEASE Firmware	1.5.0.0	1.6.0.0	42.4.0.269	All counters should be above this
	1.8.0.0	1.7.0.0	42.4.0.315	
	2.0.2.10930	1.7.0.0	42.4.0.321	
	2.0.2.10930	1.7.0.0	42.4.0.345	Added support for relay & 40°units
	4.0.2.20617	1.9.20614.1	42.4.0.395	
		2.1.30722.01		Added 8 Count Lines
		2.1.30816.01		Added Extended Grouping Mode
	4.0.2.21117			Added forcecon.html
	4.0.2.31110	3.1.41091.1	42.4.X.486	Latest Firmware

All 3000 series counters should be at the latest release version in order to fix a number of bugs discovered during the lifetime of the product.

The Release firmware includes essential bug fixes and therefore only counters running Release version firmware will be supported by Irisys.

The latest setup tools contain support for older firmware but some newer features that the tool supports but the firmware does not, will not be available.

Glossary

Active Infrared — Active Infrared devices emit their own infrared signals and then detect the infrared that bounces back. IRISYS people counters do not use active infrared; instead, passive infrared is detected.

Array — This is the 16x16 component that is built into each counter, which detects the temperature change. The output from the array is not shown to the user/installer, but the interpreted signals are shown in the form of targets.

Backup — Setup Software Program option. Allows the current set-up to be saved into a file on the PC. All options will be saved. The configuration file can then be loaded at a later date into a replacement counter or a similarly mounted counter.

CAN — (Controller Area Network). This is a real-time, serial, broadcast protocol that runs up to 1Mbps - IRISYS People Counters run at 320kbps. The signalling is carried out using differential voltages and it is from this that CAN derives much of its noise immunity and fault tolerance.

CAN Network — A connection of CAN enabled node counters connected to an IP master counter, or relay master counter.

CAN Node — A type of counter that is connected to a master in order to provide greater coverage than would be provided by the master alone. Up to 7 nodes can be connected to a master unit (dependant on power constraints).

COM Port — Usually a 9 (or 25) pin D-type connector found on some PCs specifically for communicating with external serial devices. Required to communicate locally with IRISYS counters for configuration purposes. For those PCs without on-board serial, an adapter can be used, see USB to serial adapter.

Count Line — Two count lines are configured within each master counter by default. If the master has additional node counters connected to it, the count lines will usually span across these also. A person is said to have been counted when they cross a count line – usually configured as an IN and an OUT and they conform to the chosen count mode. Additional count lines (up to 16) can be added as required for multi-directional counting.

Count Mode — Counts are incremented when a count line is crossed and that crossing conforms to the count mode selected. Various count modes are selectable which allow for immediate increment as soon as the count line is crossed and deferred increment which occurs when the target leaves the field of view. Further options to count or ignore U-turns and the enabling or disabling of Dithering monitoring can also be configured.

Data Logger — An external device that interfaces the output of a counter to display/store/record count data. Usually requires connection to a Relay master unit.

Daisy Chain — The wiring style used to connect CAN node units to a master counter, effectively, along a single terminated cable.

Default — Setup Software Menu option. Select this option to restore all settings back to factory configured settings.

Description — See Unit Descriptor.

Dual View — This is the IP enabled master unit with built in Video view capability.

Field Of View — What the counter sees through its lens; a square area on the ground. A mounting height graph is available which shows the size of the field of view at a given height. See document IPU40188.

Firmware — This is the low level software which is involved with very basic operations of the counter. E.g. IP connectivity, the embedded IP connected SetupTool, and the processor firmware which handles the tracking and counting. See Appendix C Firmware Versions.

Flash memory — This is the non-volatile area of the counter's memory that is not lost when the counter is powered down or reset. User configurable settings are stored in flash memory.

Flip Lines — Setup Software Menu option. Select this option to change the direction that a count line must be crossed to trigger a count. See section 6.9 for more details.

FOV — See Field Of View.

Fragmentation — Fragmentation is observed as a person's target dividing into other seemingly random targets as that person moves through the field of view. This can occur if the counter is mounted too low for example. The fragmentation can be affected by adjusting the 'Discrimination Sensitivity' slider, see section 6.16.1 for more details.

Ground plane — This is the mapping of each counter's field of view on to its relevant position at ground level. The master counter communicates with every connected node unit and plots and tracks each target across the ground plane as it moves from one counter's field of view to another's.

Heartbeat — Setup Software Menu option. When configured a relay master can output a pulse after a specified time interval. If ever the pulse was not received then an intelligent logger should recognise this and raise an alert that the installation may have a fault.

Indoor Unit — This is the plastic version of the people counter for indoor mounting only.

Infrared — The region of the electromagnetic spectrum bounded by the long-wavelength extreme of the visible spectrum (approximately 0.7µm) and the shortest microwaves (approximately 0.1 mm). Irisys people counters detect infrared in the waveband 7-12µm.

IP Master — A type of counter that connects to an Ethernet network and provides count data over the IP protocol. If connected to additional node units then the field of view can be effectively enlarged to cover wider entrances than possible with a single master unit. In these cases, the master counter outputs the total counts from all connected counters as if from a single unit.

LEDs — Light Emitting Diodes. These are the red and green lights that flash on the units under certain conditions.

Master — See IP Master or Relay Master.

Mounting Height — Distance from the ground that the counter(s) are installed. Valid range for standard 60° unit is 2.2m – 4.8m, and for the 40° unit is 3.5m – 7.5m. Note the optimum height is in the middle of the range.

Mounting Height Graph — Used for calculating the coverage of a single unit and also the maximum distance apart that counters can be from each other when installing a wide opening network. See document IPU40188.

Node — See CAN node.

Outdoor Unit This is the metal version of the people counter for outdoor and challenging indoor environments where moisture may be a factor. This will be available Q2 2014.

Passive infrared Passive infrared devices detect the presence of people by detecting the naturally emitted infrared radiation. This is how all Irisys units operate.

PCST People Counter Setup Tool software.

PoE See Power over Ethernet.

Power over Ethernet This is the method of powering network equipment using the spare wires in a CAT5 cable. PoE devices must conform to the IEEE standard 802.3af, which specifies a 48V supply. Irisys 3000 series IP counters do not conform to this standard as they require a maximum of 28V, and PoE voltage could damage 3000 series units. Irisys Gazelle IP units do conform to this standard and so are happily powered by PoE.

Relay Master A type of counter that connects to a logger and provides count data via relay output. If connected to additional node units then the field of view can be effectively enlarged to cover wider entrances than possible with a single master unit. In these cases, the master counter outputs the total counts from all connected counters as if from a single unit.

Relay Output Type of pulsed output accepted by some logging equipment.

Reset Counts Setup Software Menu option.

Restore Setup Software Menu option. Allows previously saved configurations to be loaded into a counter.

RS232 Name of standard PC COM port serial connection.

Settling Time The counters detect changes in temperature so must settle into their installed environment upon switch on. Settling time is between 45 seconds and 2 minutes dependant on ambient temperature.

Setup Module All counters require configuration before they work effectively. The preferred method of configuration is via IP (for IP enabled units), however a setup cable is also available in order to communicate via USB/Serial. Relay only master counters must be configured using USB/serial.

Target Every person seen by the counter will be interpreted and displayed as a separate target in the ground plane view.

Tracking The following of each target through, and around, the ground plane.

Unit Descriptor Menu option. A description can be stored in each counter which can be read over the IP network from an IP master counter.

Unit ID See Comms ID.

USB to Serial Adapter An adapter which connects to a PC USB port in order to provide a serial connection. Required when a PC does not have a built-in serial, COM, port and a serial connection to a counter is required.

Wide Opening Network When a number of counters are connected and mounted together to form a small network, usually to count across a wide doorway. The units are physically connected together and run the CAN protocol, with a master unit ‘controlling’ the network and using an IP or relay connection to output the total counts for that network. To the outside world the CAN network functionality is unseen and the counts are the same as if output from a single unit.

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