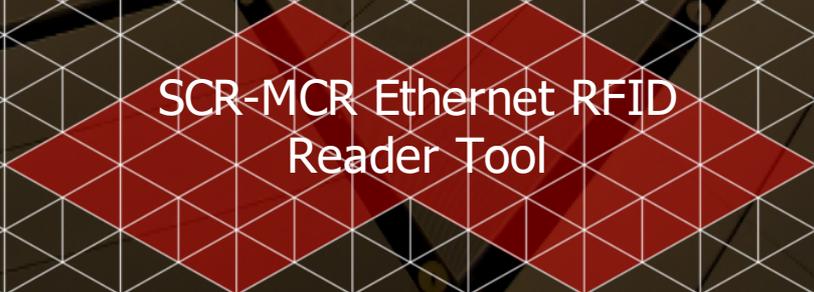


The logo for Inepro, featuring the word "inepro" in white lowercase letters with a registered trademark symbol (®) on a red rectangular background.

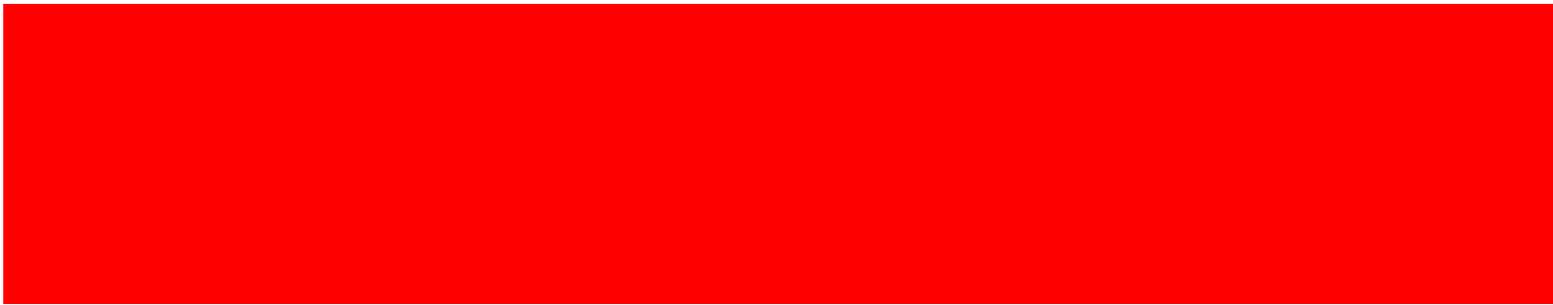
inepro®

A red diamond-shaped graphic containing the text "SCR-MCR Ethernet RFID Reader Tool". The background of the entire page is a photograph of a modern building's interior ceiling with a grid of recessed lighting fixtures, overlaid with a white grid pattern.

SCR-MCR Ethernet RFID  
Reader Tool

**Technical Manual | SCR-MCR Ethernet RFID Reader Tool**

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# SCR-MCR Ethernet RFID Reader Tool

The most versatile card reader solution



*Congratulations on your selection of the Inepro SCR-MCR Ethernet RFID Reader Tool. We are certain you will be pleased with your purchase of one of the flexible solutions of the market.*

*We want to help you get the best result from your SCR-MCR Ethernet RFID Reader Tool. This manual contains information on how to do that; please read it carefully. Due to continuous product improvements this manual is subject to changes without notice.*

*We strongly recommend you read the license agreement to fully understand its coverage and your responsibilities of ownership.*

*Your Inepro dealer is dedicated to your satisfaction and will be pleased to answer your questions and your concerns.*

*Best wishes,  
Inepro BV.*

# SCR-MCR Ethernet RFID Reader Tool

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# Directives

## ATTENTION!!

Read this manual carefully before installing the SCR-MCR Ethernet RFID Reader Tool!

### Mains connection

Before connecting the appliance to the mains, check that the mains supply voltage corresponds to the voltage printed on the type plate of the adapter. If the mains voltage is different, consult your supplier.

### Guarantee

No guarantee can be given if safety regulations are not followed.

### Changes and/or modifications

Changes and/or modifications which have not been approved by the responsible party can void the user's authority to operate the equipment.

### Security

Always disconnect the power supply before handling anything inside the device.



#### For Indoor Use Only

This device may only be used indoors.



#### FCC Federal Communications Commission - US

This device complies with part 15 of the FCC rules, operation is subject to two conditions:

- (1) This device may not cause harmful interference.
- (2) This device must accept any interference received, including interference that may cause undesired operation.



#### CE Conformité Européenne (Conform European Norm)

This device is in conformity with the EMC directive and low-voltage directive.

#### Conformité d'Industrie Canada

Appareil concernés:  
MCR708, MCR708G, DCR708, DCR708G, SCR708

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence.

L'exploitation est autorisée aux deux conditions suivantes :

- (1) l'appareil ne doit pas produire de brouillage, et
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

#### Confirm Canada Industries

Relevant Devices:  
MCR708, MCR708G, DCR708, DCR708G, SCR708

This device complies with Industry Canada's licence-exempt RSSs. Operation is subject to the following two conditions:

- (1) This device may not cause interference; and
- (2) This device must accept any interference, including interference that may cause undesired operation of the device.



#### RCM Regulatory Compliance Mark

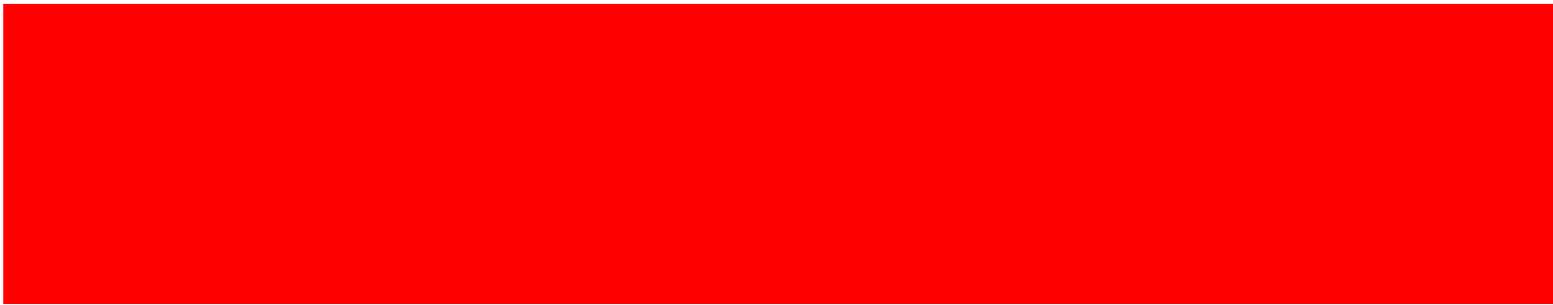
This device is in conformity with Australian law.



#### End of life directives

Inepro is paying a lot of attention to environmentally-friendly production. Your new device contains materials which can be recycled and reused. At the end of its life specialised companies can dismantle the discarded device to recycle the reusable materials and to minimise the amount of materials to be disposed of. Please observe the local regulations regarding the disposal of packaging materials, exhausted batteries and old equipment.





# Introduction

**Part**

# Introduction

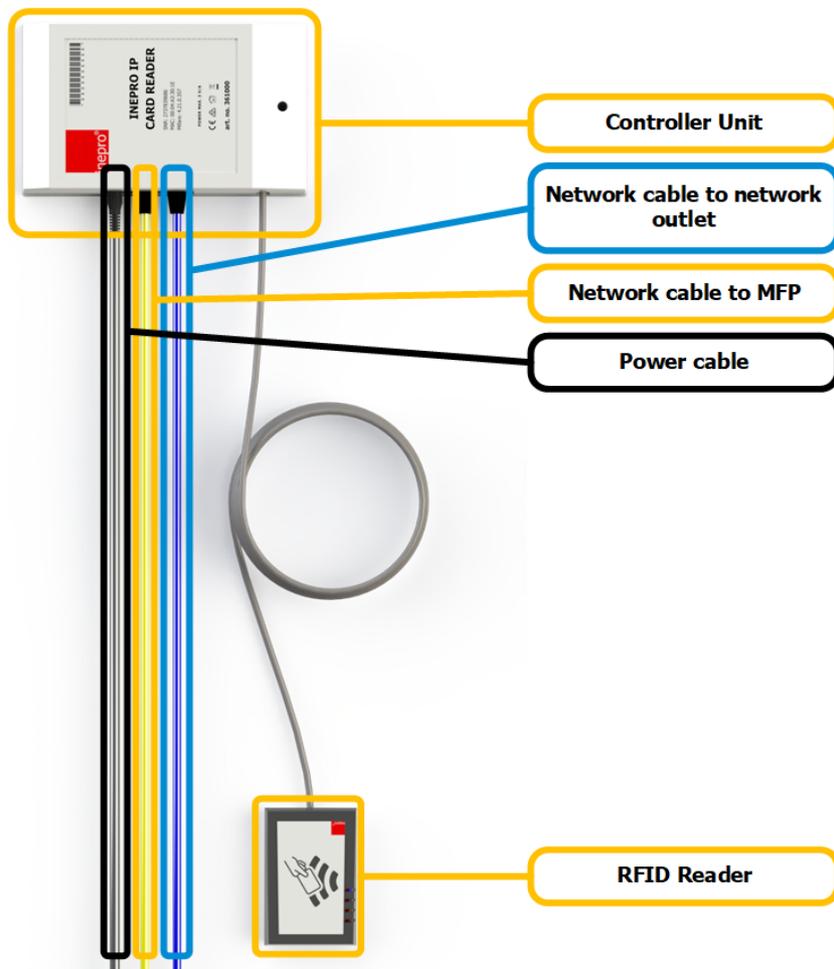


## Introduction

The SCR-MCR Ethernet RFID Reader Tool is a handy tool for the ethernet RFID reader.

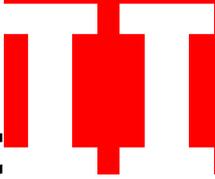
The ethernet RFID reader set consists of a ethernet RFID reader and a controller unit. The firmware of both the controller and the ethernet RFID reader can be updated with this tool and the reader can be given another configuration (reading other cards or the same cards in a different way). The tool can also execute a number of simple hardware tests.

This manual aspires to hand you a set of easy and short instructions for all these tasks ■



# Application Overview

Part

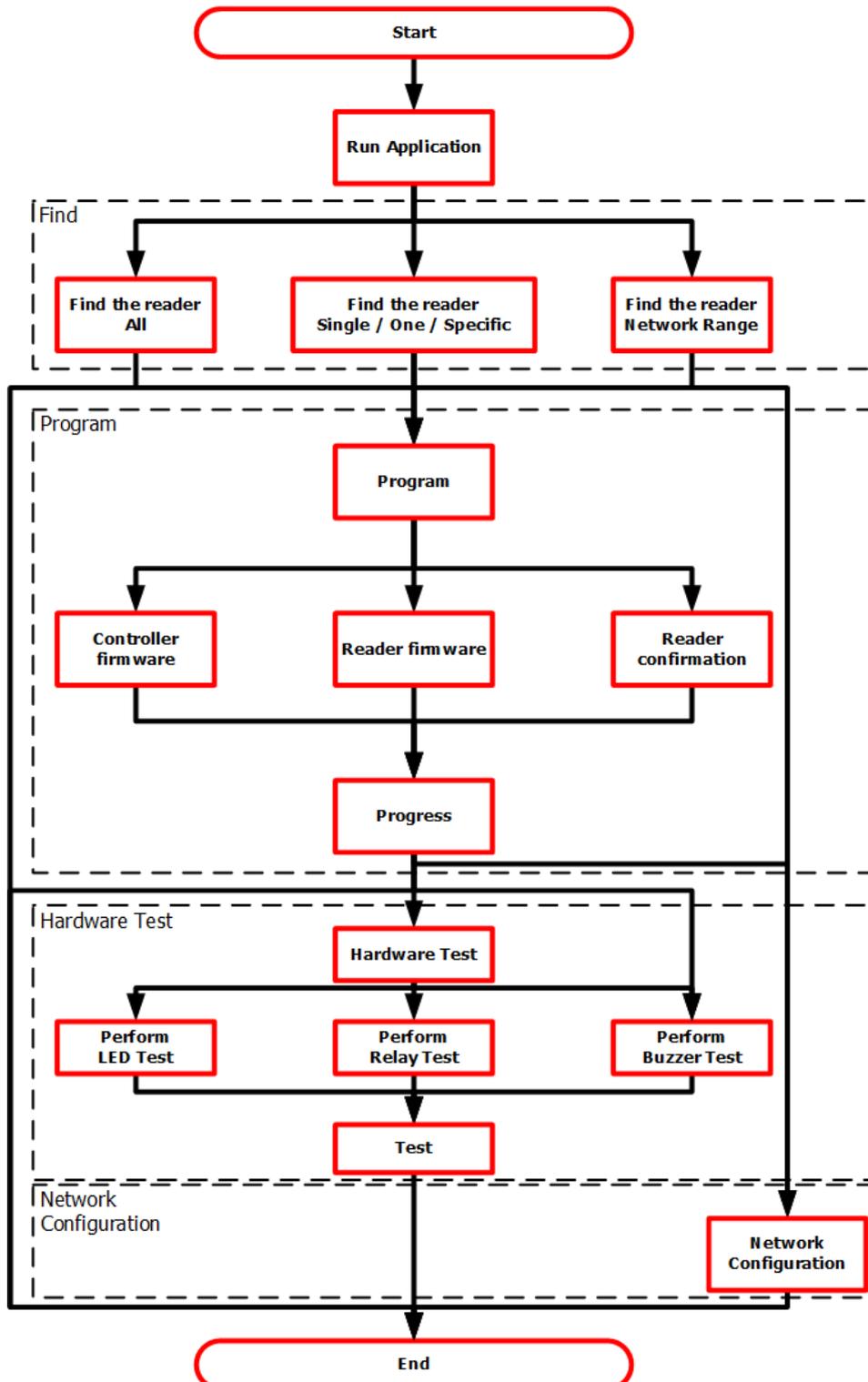


# Application Overview



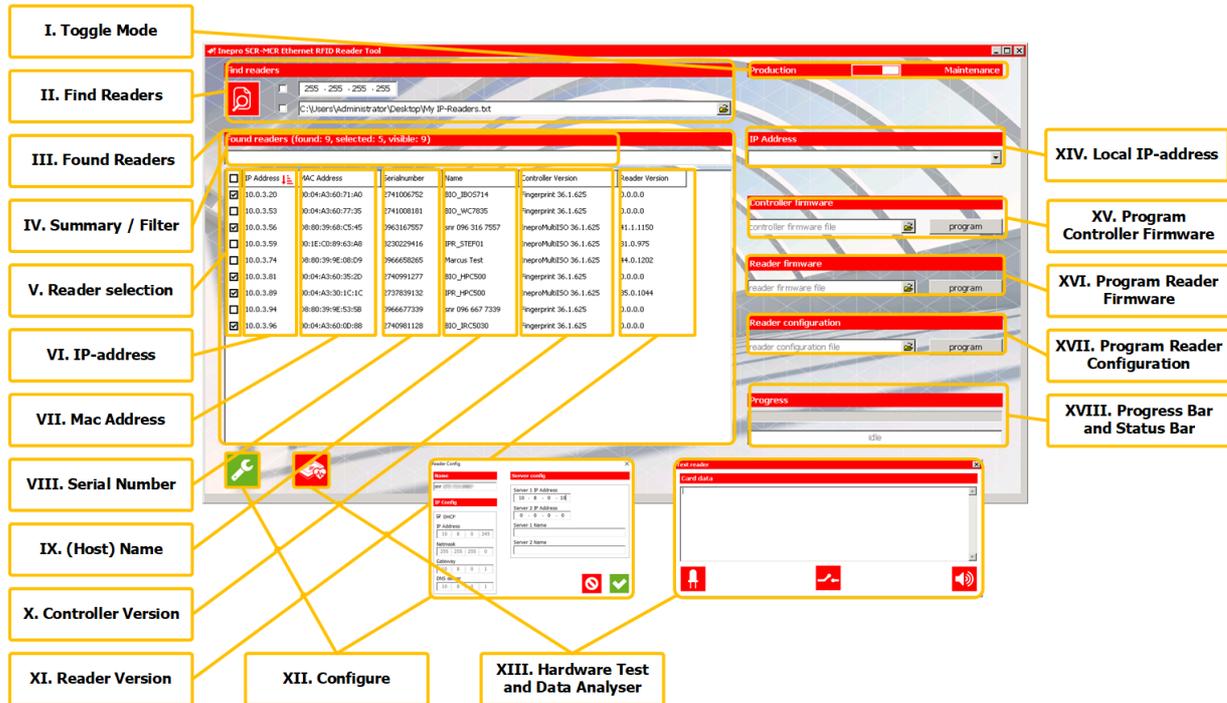
## Application Overview

### Functional flow



## GUI Overview

Use this GUI overview to see where each section is located:



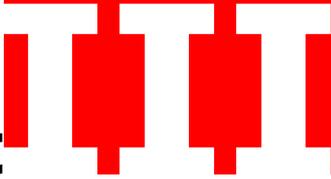
Section	Description
I. Toggle Mode	Use this to toggle to mode from 'Production' to 'Maintenance' or vice versa.
II. Find Readers	Use the find readers section to find the ethernet RFID reader on the network.
III. Found Readers	The list of readers found after scanning the network (or network segment) or specific IP-address.
IV. Summary / Filter	This has a summary of the found and displayed reader(s). Use this filter, to filter the search results. All values in the data grid are compared to the search term.
V. Reader Selection	Use these check boxes to make a selection out of the list of found readers.
VI. IP-address	The IP-address of the found reader.
VII. MAC-address	The hardware (or MAC-address) of that reader.
VIII. Serial Number	The ethernet RFID reader's Inepro serial number.
IX. (Host) Name	The ethernet RFID reader's host name.
X. Controller Version Info	The firmware type and version of the controller.
XI. Reader Version Info	The ethernet RFID reader's firmware version.
XII. Configure selected readers	Configure the network properties of the selected ethernet RFID reader(s).
XIII. Hardware Test and data analyser	Perform a hardware test or card data analysis.
XIV. Local IP-address	Select the IP-address of your preferred network card to use in the application is running on. This IP-address is used to communicate directly with the ethernet RFID reader.
XV. Program Controller Firmware	In this section the selected controller(s) firmware can be updated.
XVI. Program Reader Firmware	In this section the selected The ethernet RFID reader(s) firmware can be updated.
XVII. Program Reader Configuration	In this section the selected The ethernet RFID reader(s) can be configured.
XVIII. Progress Bar / Status Bar	In this section the progress of writing the firmware or configuration is shown. In the status bar a description of the current process is shown. Or 'idle' when the system is idle.

Consult the 'How to.' chapter of this manual for instructions on each section ■



**How to..**

**Part**



# How to..



## How to toggle the tool mode

The application has two modes, the 'Production' mode and the 'Maintenance' mode.

The 'Production' mode is for changing the network configuration, testing the hardware or just reviewing versions and other properties.

The 'Maintenance' mode is for programming firmware onto the controller or reader, to change the reader configuration and to analyse card data.

To change the mode, slide the slider in the upper right corner to the appropriate mode. ■



## How to find reader(s)

You can find readers both in 'Production' mode as in 'Maintenance' mode.

Before doing anything with the ethernet RFID reader(s) you must have them visible in the tool.

There are two ways to find ethernet RFID reader(s) on the network. You can scan for them on an specific IP-address or network range. Another way is to provide a list of IP-addresses to be scanned. Both methods can be combined.

### Example case:

A site with a lot of different networks has allowed broadcasts between those networks. (All their routers allow broadcasting to the other network).

It uses the default network mask (255.255.255.0), and has these readers on these IP-addresses:

192.168.10.15	Reader_1
192.168.10.20	Reader_2
192.168.50.10	Reader_3
192.168.50.25	Reader_4
10.0.0.55	Reader_5
10.5.0.60	Reader_6



For more information on the term 'Broadcast Address', see 'Broadcast Address' on page: [25](#).

# Find reader(s)

## Scan for readers by network range or specific IP-address

- Scan for ethernet RFID readers on an specific IP-address or network range. Scan a range by using a broadcast address (use a value of 255 in that network segment).
- Click the 'Scan'  button to search for connected IP-Readers on that IP-address or range.



### Find all

- To find all readers on the connected networks use the range '255.255.255.255', this will send a broadcast over all connected networks that have allowed broadcasting. All the readers will be found.

### Find specific

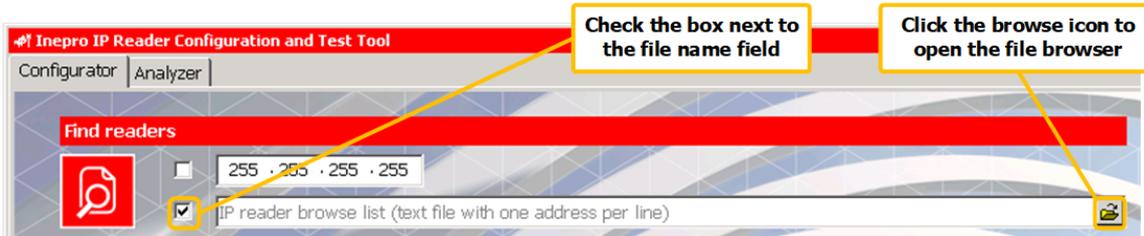
- Find all in the 192.168.x.x range: use '192.168.255.255'. => 192.168.10.15, 192.168.10.20, 192.168.50.10 and 192.168.50.25
- Find all in the 10.x.x.x range: use '10.255.255.255'. => 10.0.0.55, 10.5.0.60
- Find all in the 10.5.0.x range: use '10.5.0.255'. => 10.5.0.60
- Find the reader with IP-address '192.168.50.10' => 192.168.50.10

**i** For more information on the term 'Broadcast Address', see 'Broadcast Address' on page: [25](#).

# How to..

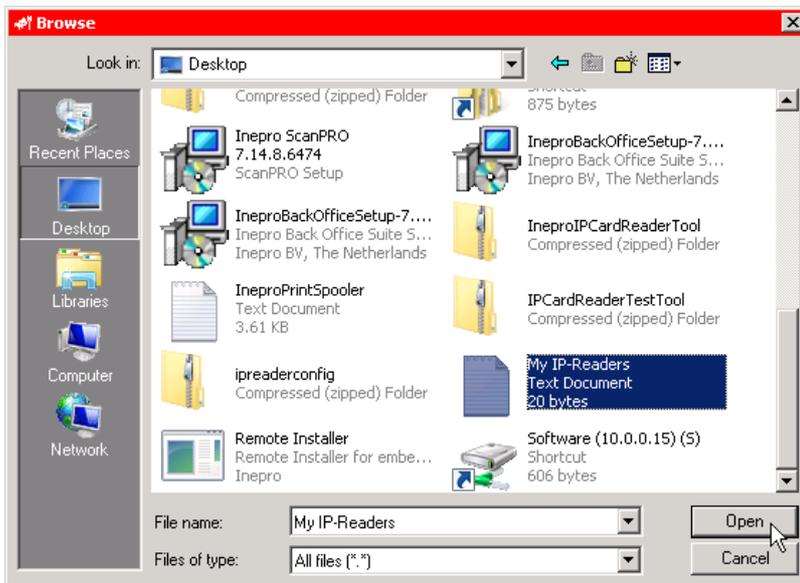
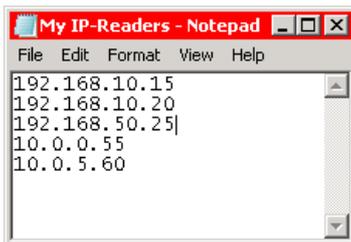
## Scan for readers by text file

A text file with IP-addresses may also be used, one address per line. Please check the box if you need to use such a text file).



**i** To use this option you must open a text editor (like Notepad) and create and save a text file with IP-addresses (one IP-address per line).

- For our example create a text file named 'My IP-Readers.txt' and fill it like the image shows below:

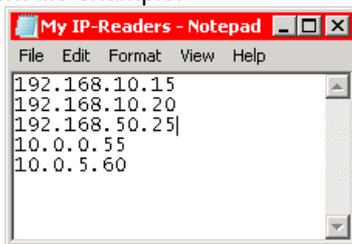


- In the SCR-MCR Ethernet RFID Reader Tool, select and open that text file.

# Find reader(s)



Text file example:



- Click the 'Scan'  button.

**i** 'Reader\_3', (IP-address 192.168.50.10) is not in the list and will not be found.

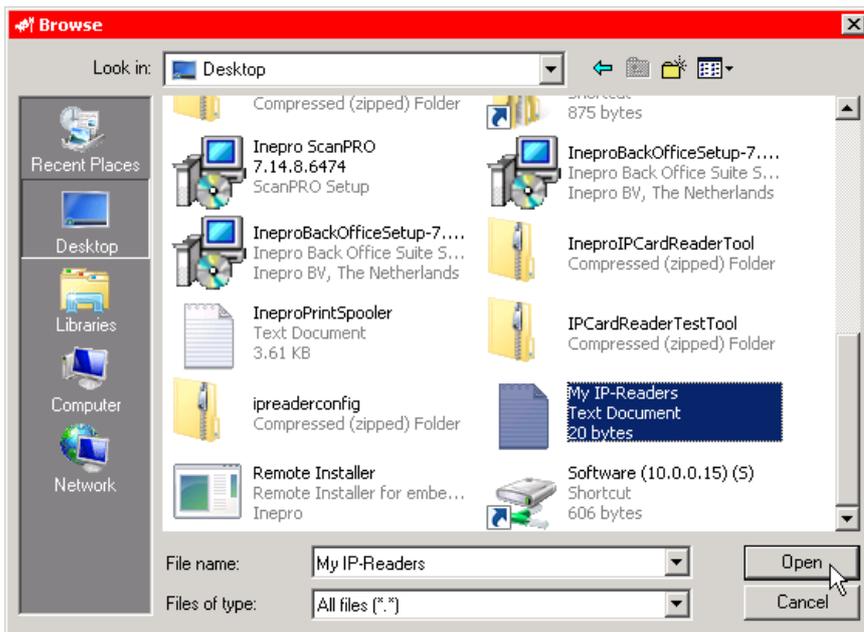
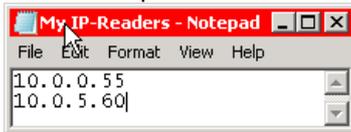
# How to..

## Scan using the combination of the two search methods

Both methods can also be used at the same time.

If the range is set to '192.168.255.255' and the text file is like this:

Text file example:



- Select and open the text file.

- Click the 'Scan'  button.

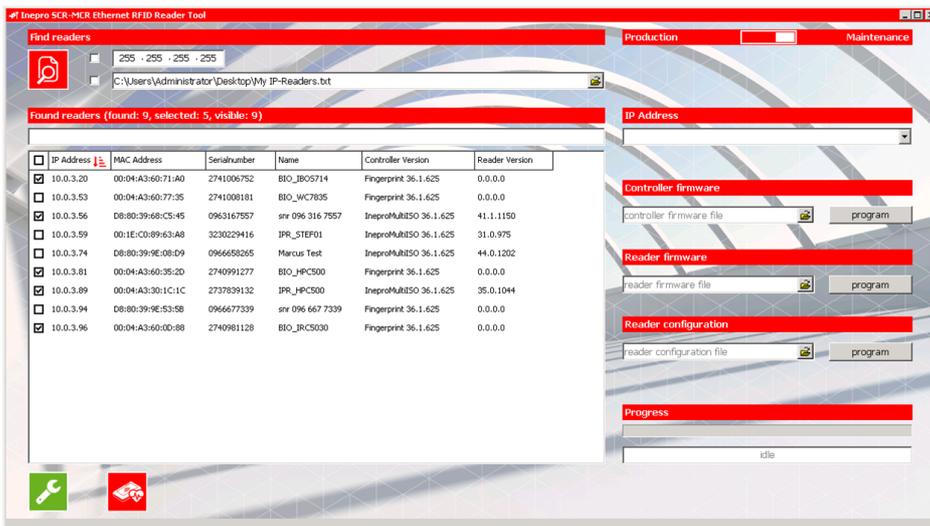
Then all readers in the 'example case' on page:  would be found ■

# Edit network settings



## How to edit the reader's network settings

You can edit one or more reader's network settings both in 'Production' mode as in 'Maintenance' mode. The list with readers is returned, with (when possible) an IP-address and host name.



The network settings can be opened for either one reader or for multiple readers:

### Edit the network settings for a single reader

- Open the network configuration of an IP-Reader by double-clicking it in the list. Alternatively, so can also tick the check box of only one row. Then click then green 'Configure' button in the lower-left corner.

### Edit network settings for multiple readers

- Select multiple readers in the list (by ticking the check box at the front of the row) and then click then green 'Configure' button in the lower-left corner.

**i** Note that some options are left out. Those can only be set selecting a single ethernet RFID reader.

# How to..

## The network settings window

**i** This screen is divided in these sections. 'Name', 'IP configuration', 'Server configuration':

The screenshot shows a 'Reader Config' window with three main sections: 'Name', 'IP Config', and 'Server config'. The 'Name' section has a text field for 'snr'. The 'IP Config' section includes a checked 'DHCP' checkbox, and fields for 'IP Address' (10.8.0.245), 'Netmask' (255.255.255.0), 'Gateway' (10.8.0.1), and 'DNS server' (10.8.0.1). The 'Server config' section has fields for 'Server 1 IP Address' (10.8.0.10), 'Server 2 IP Address' (0.0.0.0), 'Server 1 Name', and 'Server 2 Name'. At the bottom right, there are two buttons: a red 'no' button and a green 'check' button.

### Name

Key	Description
Name	The name of the IP-Reader (like 'Printer Q745'). This name is also used as host name.

### IP configuration

Key	Description
Dynamic Host Configuration Protocol	Activate when DHCP is used. Disable when the network information is added manually.
IP	The IP-address of the IP Reader.
Net mask	The net mask (Change only if a subnet is used, ask you administrator for more information, if you are not sure). Default value 255.255.255.0
Gateway	The IP-address of the gateway (The gateway is the server, that is set between 2 networks (a private network and Internet). Normally this would be the same address as the DNS Server.
Domain Name System	The IP-address of the server with the Domain Name System, the system that translates names into IP-addresses.

### Server Configuration Settings

Key	Description
Server 1 IP	IP-address of the server.
Server 2 IP	IP-address of the backup server (used when server 1 is offline). (Optional)
Server 1 name	When DNS is used and this field is set, the IP-address is ignored, and the content of this field is used as the host name of the server.
Server 2 name	When DNS is used and this field is set, the IP-address is ignored, and the content of this field is used as the back-up host name of the server.

**i** The  button closes this screen without saving any chances made.

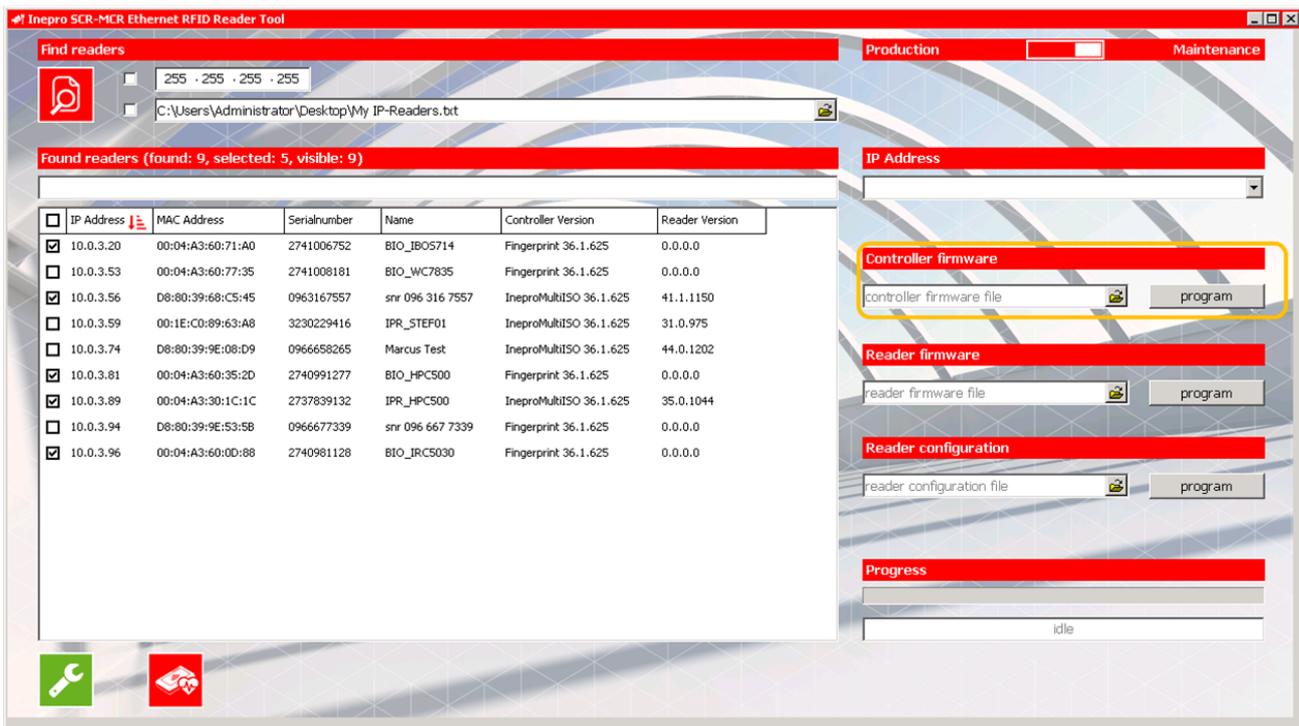
**i** The  button sends the new network configuration to the IP-Reader.

- Save the network configuration (send configuration to the IP-Reader) by clicking the green 'Check' button ■

# Program the controller firmware

## How to program the controller firmware

- Make sure the tool is in 'Maintenance' Mode.



IP Address	MAC Address	Serialnumber	Name	Controller Version	Reader Version	
<input checked="" type="checkbox"/>	10.0.3.20	00:04:A3:60:71:A0	2741006752	BIO_IBOS714	Fingerprint 36.1.625	0.0.0.0
<input type="checkbox"/>	10.0.3.53	00:04:A3:60:77:35	2741008181	BIO_WC7835	Fingerprint 36.1.625	0.0.0.0
<input checked="" type="checkbox"/>	10.0.3.56	D8:80:39:68:C5:45	0963167557	snr 096 316 7557	IneproMultiISO 36.1.625	41.1.1150
<input type="checkbox"/>	10.0.3.59	00:1E:C0:89:63:A8	3230229416	IPR_STEF01	IneproMultiISO 36.1.625	31.0.975
<input type="checkbox"/>	10.0.3.74	D8:80:39:9E:08:D9	0966658265	Marcus Test	IneproMultiISO 36.1.625	44.0.1202
<input checked="" type="checkbox"/>	10.0.3.81	00:04:A3:60:35:2D	2740991277	BIO_HPC500	Fingerprint 36.1.625	0.0.0.0
<input checked="" type="checkbox"/>	10.0.3.89	00:04:A3:30:1C:1C	2737839132	IPR_HPC500	IneproMultiISO 36.1.625	35.0.1044
<input type="checkbox"/>	10.0.3.94	D8:80:39:9E:53:58	0966677339	snr 096 667 7339	Fingerprint 36.1.625	0.0.0.0
<input checked="" type="checkbox"/>	10.0.3.96	00:04:A3:60:0D:88	2740981128	BIO_IRC5030	Fingerprint 36.1.625	0.0.0.0

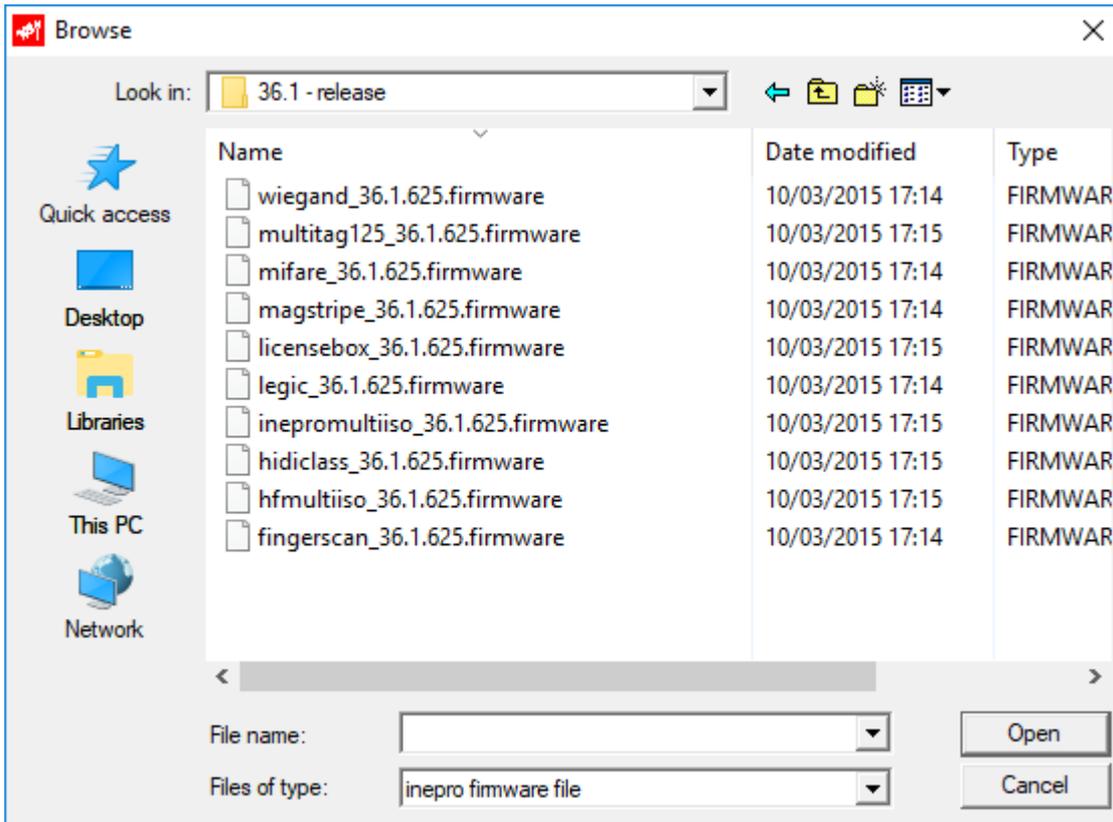
 The window above shows multiple selected readers

- Select the reader(s) you want to work with by ticking the check box at the front of the row.

# How to..



- Browse for the desired firmware file. Click the 'Browse' icon.



- Re-check that the correct readers are selected.



- Click 'Program'.



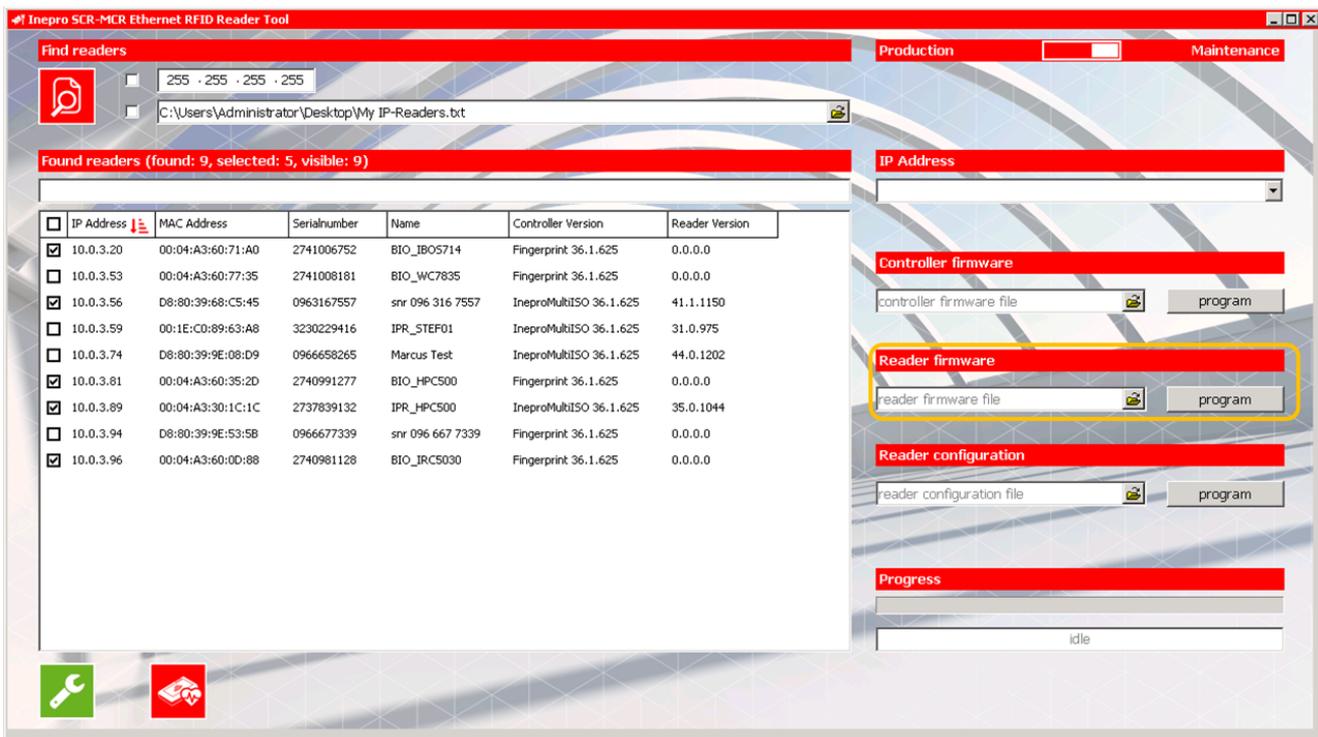
The progress is shown in the progress bar as well as the current status or process.

The controller firmware should now be programmed ■

# Program the reader firmware

## How to program the reader firmware

- Make sure the tool is in 'Maintenance' Mode.



<input type="checkbox"/>	IP Address	MAC Address	Serialnumber	Name	Controller Version	Reader Version
<input checked="" type="checkbox"/>	10.0.3.20	00:04:A3:60:71:A0	2741006752	BIO_IBOS714	Fingerprint 36.1.625	0.0.0.0
<input type="checkbox"/>	10.0.3.53	00:04:A3:60:77:35	2741008181	BIO_WC7835	Fingerprint 36.1.625	0.0.0.0
<input checked="" type="checkbox"/>	10.0.3.56	D8:80:39:68:C5:45	0963167557	snr 096 316 7557	IneproMultiISO 36.1.625	41.1.1150
<input type="checkbox"/>	10.0.3.59	00:1E:C0:89:63:A8	3230229416	IPR_STEF01	IneproMultiISO 36.1.625	31.0.975
<input type="checkbox"/>	10.0.3.74	D8:80:39:9E:08:D9	0966658265	Marcus Test	IneproMultiISO 36.1.625	44.0.1202
<input checked="" type="checkbox"/>	10.0.3.81	00:04:A3:60:35:2D	2740991277	BIO_HPCS00	Fingerprint 36.1.625	0.0.0.0
<input checked="" type="checkbox"/>	10.0.3.89	00:04:A3:30:1C:1C	2737839132	IPR_HPCS00	IneproMultiISO 36.1.625	35.0.1044
<input type="checkbox"/>	10.0.3.94	D8:80:39:9E:53:5B	0966677339	snr 096 667 7339	Fingerprint 36.1.625	0.0.0.0
<input checked="" type="checkbox"/>	10.0.3.96	00:04:A3:60:0D:88	2740981128	BIO_IRCS030	Fingerprint 36.1.625	0.0.0.0

**i** The window above shows multiple selected readers

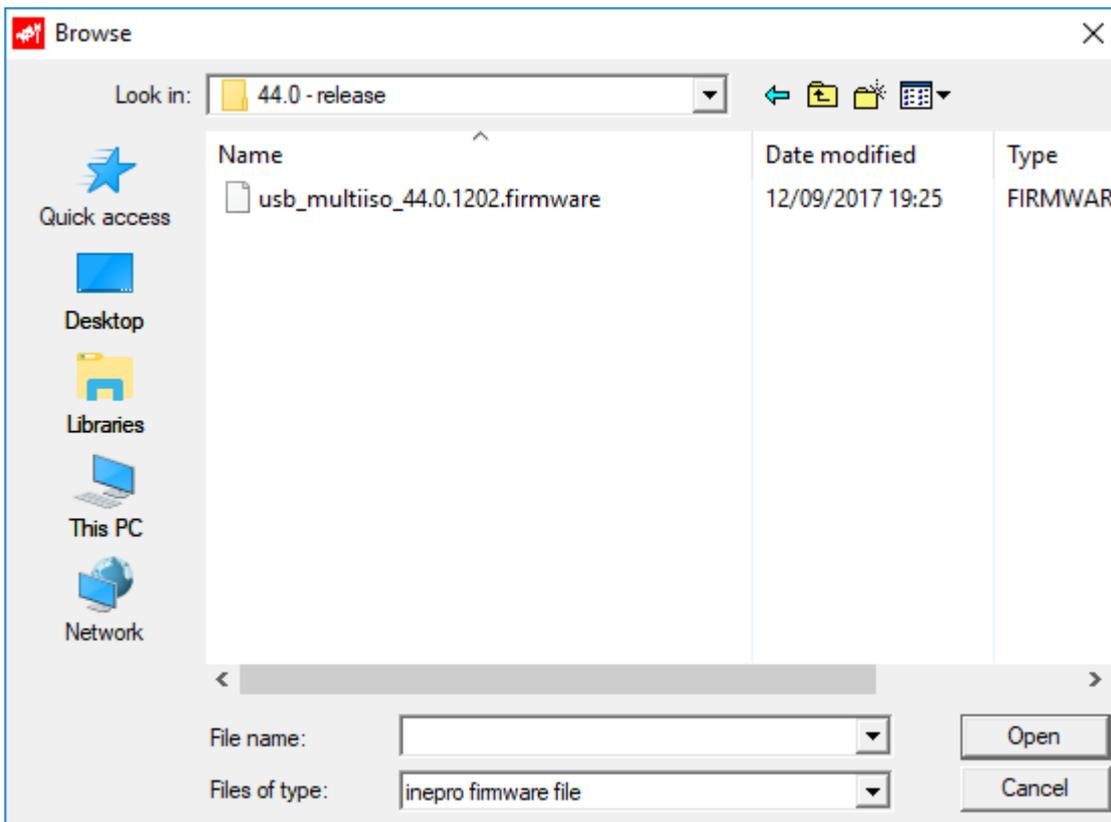
- Select the reader(s) you want to work with by ticking the check box at the front of the row.

# How to..



Click the browse icon to open the file browser

- Browse for the desired firmware file. Click the 'Browse' icon. Don't let the name of the file deter you, although it's name contains 'usb\_' it is also suited for the IP-reader.



- Re-check that the correct readers are selected.



Click the 'Program' button

- Click 'Program'.

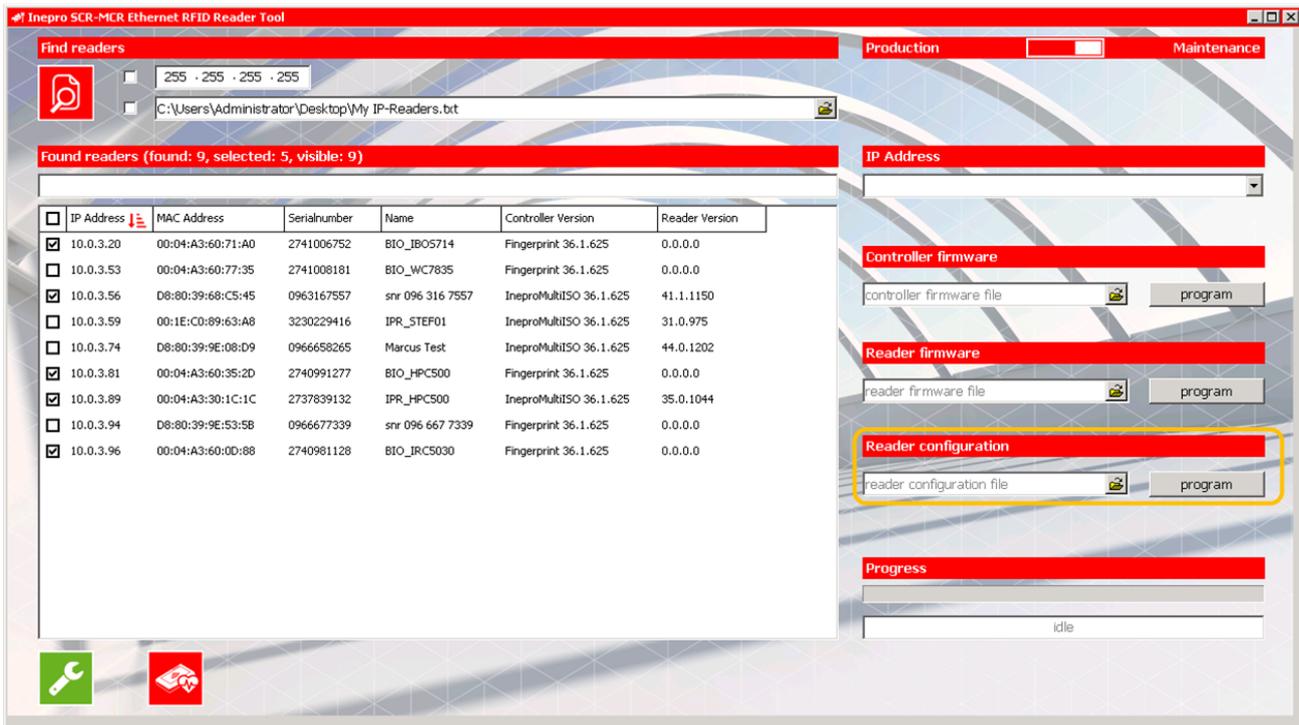


The progress is shown in the progress bar as well as the current status or process.

The reader firmware should now be programmed ■

# Program the reader configuration

## How to program the reader configuration

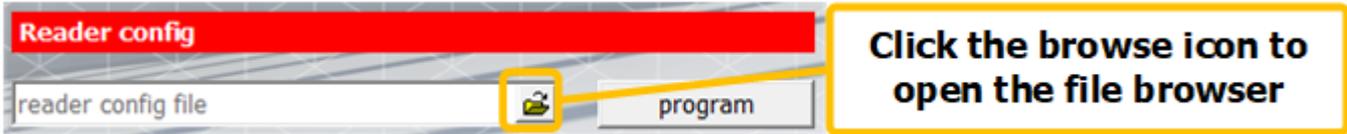


<input type="checkbox"/>	IP Address	MAC Address	Serialnumber	Name	Controller Version	Reader Version
<input checked="" type="checkbox"/>	10.0.3.20	00:04:A3:60:71:A0	2741006752	BIO_IBOS714	Fingerprint 36.1.625	0.0.0.0
<input type="checkbox"/>	10.0.3.53	00:04:A3:60:77:35	2741008181	BIO_WC7835	Fingerprint 36.1.625	0.0.0.0
<input checked="" type="checkbox"/>	10.0.3.56	D8:80:39:68:C5:45	0963167557	snr 096 316 7557	IneproMultiISO 36.1.625	41.1.1150
<input type="checkbox"/>	10.0.3.59	00:1E:C0:89:63:A8	3230229416	IPR_STEF01	IneproMultiISO 36.1.625	31.0.975
<input type="checkbox"/>	10.0.3.74	D8:80:39:9E:08:D9	0966658265	Marcus Test	IneproMultiISO 36.1.625	44.0.1202
<input checked="" type="checkbox"/>	10.0.3.81	00:04:A3:60:35:2D	2740991277	BIO_HPC500	Fingerprint 36.1.625	0.0.0.0
<input checked="" type="checkbox"/>	10.0.3.89	00:04:A3:30:1C:1C	2737839132	IPR_HPC500	IneproMultiISO 36.1.625	35.0.1044
<input type="checkbox"/>	10.0.3.94	D8:80:39:9E:53:58	0966677339	snr 096 667 7339	Fingerprint 36.1.625	0.0.0.0
<input checked="" type="checkbox"/>	10.0.3.96	00:04:A3:60:0D:88	2740981128	BIO_IRC5030	Fingerprint 36.1.625	0.0.0.0

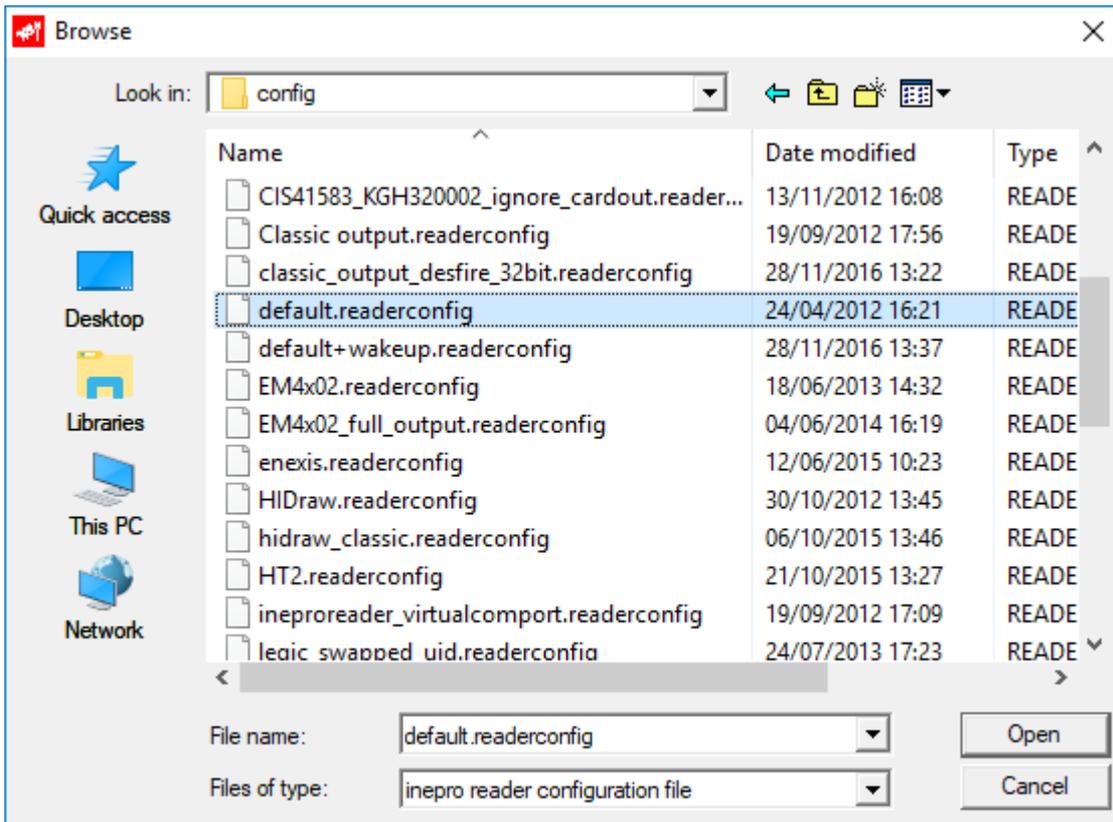
 The window above shows multiple selected readers

- Select the reader(s) you want to work with by ticking the check box at the front of the row.

# How to..



- Browse for the desired firmware file. Click the 'Browse' icon.



- Re-check that the correct readers are selected.



- Click 'Program'.



The progress is shown in the progress bar as well as the current status or process.

The reader configuration should now be programmed ■

# Perform a hardware test

## How to perform a hardware test

- Click the 'Hardware Test' button  on the bottom of the screen. A pop-up window will open.

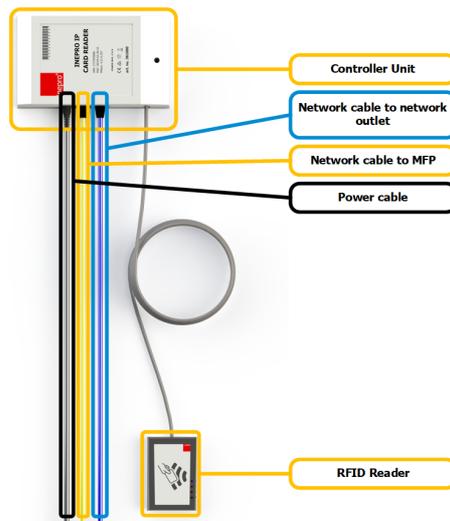


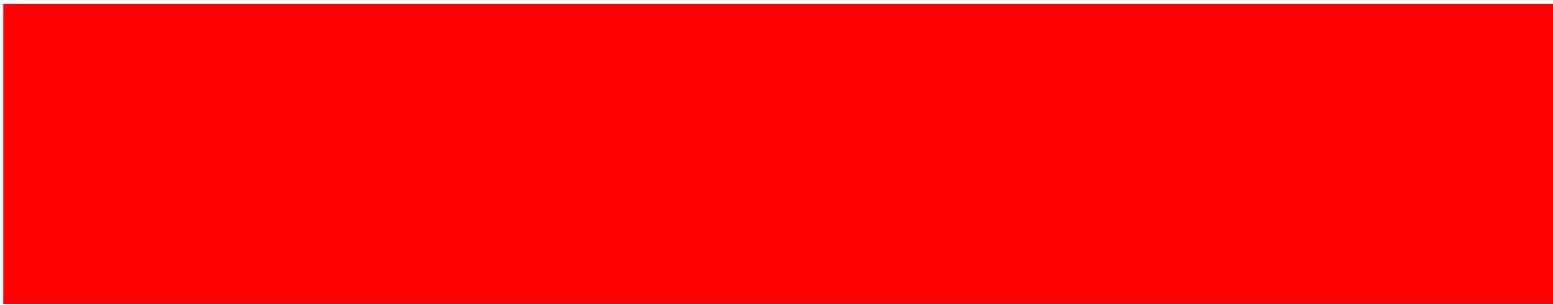
In the test reader window you can test the ethernet RFID reader:

- The LED - the orange LED should blink 3x
- The relay - a click-clack sound should come from the relay on the reader
- The buzzer - a number of beeps should be heard

You can also analyse card data; Place a card on the reader, wait a short period and take it off.

Now you should have 2 messages a [CARD\_IN] event and a [CARD\_OUT] event, with all the details the reader has read from that card ■





**Part IV**

# Appendices



## Appendix I: Concepts

### Net mask

A network mask, subnet mask or net mask is a binary number that is used to divide or sub net the IP-addressing. The IP-addresses within this sub net are within the same broadcast domain. As a result of this broadcasts are not send over the entire Internet.

The 'net mask' is a binary number (say 'n') of consecutive 'ones' started with the MSB (Most Significant Bit) of a 32-bits IP-address (8 bits times 4), followed by 32-n 'zeros'. For IP-addresses belonging to this net mask the first n bits are the (sub) net number, and the following 32-n bits are the host address.

#### *Example*

Given: The sub net mask (written as decimal numbers) is '255.255.255.0'. Then there are 24 'ones' and 8 'zeros'. Written as binary numbers this net mask is 11111111.11111111.11111111.00000000. When this mask is 'laid over' an incoming IP-address and a logical AND operation is executed, the result would be the sub net address.

Say this net mask is used with the IP-address '192.10.10.128'. When the AND operation is executed on this IP-address and the sub net mask ('255.255.255.0') then this would result in the sub net number '192.10.10.0'. We can also conclude that all hosts within that subnet have an IP-address that is formatted like this: '192.10.10.xxx' (the x's being a number from 0-255) and has a maximum of 256 addresses. The first address (in this case 192.10.10.0) is always used as the network ID and the last (in this case 192.10.10.255) is always used as the broadcast address.

#### *Two reserved 'host-addresses'*

These two address are always reserved:

- Addresses with all host positions set to binary '1' (in decimals: '255.255.255.255'), because this is the so-called broadcast address. In the example this would be 8 bits.
- Addresses with all host positions set to binary '0' (in decimals: '0.0.0.0'), this is the zero network or 0.0.0.0, which in Internet Protocol standards stands for this network, i.e. the local network.

#### *Addresses ending with a binary '0' (0) or eight binary '1's (255)*

- An IP address ending with a binary '0' (in decimals: '0', like '192.168.5.0') is a sub net number or network ID and can not be used as a host address. It is used to identify that entire network.
- An IP address ending with eight binary '1's (in decimals: '255', like '192.168.5.255') is the broadcast address for that network. So, provided that the sub net mask is 255.255.255.0, and the IP address is 192.168.5.255, it would be the broadcast address for the 192.168.5.0 network, broadcasting to the network range: 192.168.5.1 - 192.168.5.254).

## Broadcast address

The broadcast address is an IP-address that has all of its host bits set to a binary value of '1' (in decimals: '255') ((x.x.x.255 with a sub net mask of 255.255.255.0). The broadcast address is used when an IP packet must be sent to all hosts within the same sub net as the sender of the message. This might be needed when sending messages that provide information about a configuration change in the network, like DHCP.

In other words, take the host's IP address, and set to '1' any bit positions which hold a '0' in the subnet mask. For broadcasting a packet to an entire IPv4 subnet using the private IP address space 172.16.0.0/12, which has the subnet mask 255.240.0.0, the broadcast address is 172.16.0.0 | 0.15.255.255 = 172.31.255.255.

A special definition exists for the IP broadcast address 255.255.255.255. It is the broadcast address of the zero network or 0.0.0.0, which in Internet Protocol standards stands for this network, i.e. the local network. Transmission to this address is limited by definition, in that it is never forwarded by the routers connecting the local network to other networks.

## DHCP

The Dynamic Host Configuration Protocol (DHCP) is a network management protocol used on TCP/IP networks whereby a DHCP server dynamically assigns an IP address and other network configuration parameters to each device on a network so they can communicate with other IP networks. A DHCP server enables computers to request IP addresses and networking parameters automatically, reducing the need for a network administrator or a user to manually assign IP addresses to all network devices. In the absence of a DHCP server, a computer or other device on the network needs to be manually assigned an IP address.

## DNS

A private network and the Internet use IP-addresses to identify the network devices connected to the network.

The Domain Name System (DNS) is a hierarchical decentralized naming system for computers, services, or other resources connected to the Internet or a private network. It associates various information with domain names assigned to each of the participating entities. Most prominently, it translates more readily memorized domain names to the numerical IP addresses needed for locating and identifying computer services and devices with the underlying network protocols. By providing a worldwide, distributed directory service, the Domain Name System is an essential component of the functionality on the Internet, that has been in use since 1985.

The Domain Name System delegates the responsibility of assigning domain names and mapping those names to Internet resources by designating authoritative name servers for each domain. Network administrators may delegate authority over sub-domains of their allocated name space to other name servers. This mechanism provides distributed and fault tolerant service and was designed to avoid a single large central database

The Domain Name System (DNS) simply provided a way for a user to enter a host name (like [www.google.com](http://www.google.com)) after which the correct IP-address (in my case: '172.217.17.142') is looked up and contacted ■



**Part V**

# Notes



## Notes

This area is meant for the reader's notes:



# Notes



