Getting Started with i^3 RMI

The future in control

Getting Started with i^3RMI

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1.0 Introduction

*i*³RMI "Web Machine Interface", is a new way to capture all the benefits of a HMI web page with the simplicity of i³Configurator's Screen Editor.

*i*³RMI works by using the Micro SD card in the *i*³ as the web server. In other words, the web site files and graphics are hosted on the SD card in the controller.

An *i*³ application, containing the controller logic and graphics, with FTP configured on the LAN port, is downloaded to the unit as standard. A second i³Configurator application must also be created for the Web site files and graphics. This is separate to the *i*³ program and the graphics need not be the same. However, for relating data and registers in the controller application to the objects on the web site, the memory addresses (registers) must correspond.

The Web page files can be published directly from i³Configurator to the SD card in the *i*³, using FTP. Once the web page files have been successfully transferred to the removable media on the controller, the interface can be remotely viewed from any PC, or wireless device, connected to the same local network.

This training document outlines all the steps that need to be taken in order to set up a controller for *i*³RMI functionality.

1.1 Hardware and Software Requirements

- *i*³CM, *i*³CX, *i*³Ee, *i*³DX controller
- Laptop / PC
- i³Configurator version 9.72 SP2 or later
- The following versions or later: Firmware 14.22, FPGA 0.3, InitRD 1.07, OS 2.6.35.43
- *i*³RMI Package (containing relevant firmware, demo programs, *i*³Configurator)
- 2GB or above Micro SD Card (Recommended: Kingston or SanDisk)

2   Opening *i³*Configurator & Creating a Program

Begin by installing, then opening *i³*Configurator that is provided in the *i³*RMI Package. When *i³*Configurator opens, confirm that the *i³*Configurator displays the correct version.
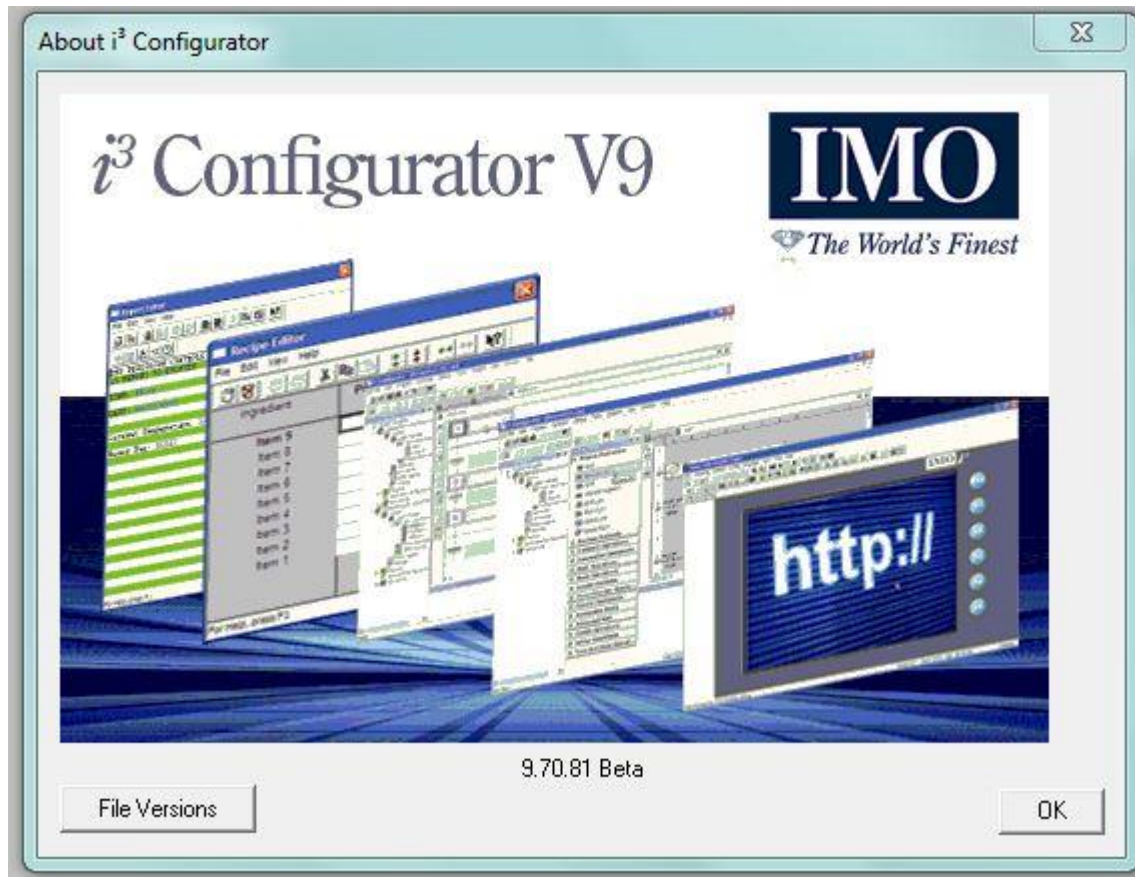
Open the demo *i³*Configurator project, provided in the *i³*RMI Package, called "cx *i³* RMI". This csp file can be found in the "*i³*RMI Demo Programs" folder in the *i³*RMI package provided. Follow the forthcoming steps.

Ensure that an Ethernet connection is being used, a serial connection will **not** work once it is time to "FTP" the web pages to the controller.

Note: Skip section 3.1 and refer to 'Appendix A' if an Access Point (TP-Link Nano-Router or similar) is being used for *i³* connectivity.

2.1   Setting a Static IP for the PC and i^3

It is only necessary to set up a static IP, on the PC or laptop, if a ***direct*** Ethernet connection is being made between the PC and the i^3, as opposed to connecting to the i^3 wirelessly or on the LAN. If it is unclear on how to assign the PC a static IP:

https://it.uoregon.edu/static-ip-win7

This is a great website with step by step process on how to assign the PC in use a static IP address. This enables the PC to be on the same network as the controller.

For example:

If the controller has IP address 192.168.254.128 and subnet 255.255.255.0, then the PC can have IP address 192.168.254.129 and subnet 255.255.255.0. The first three "octets" must be the same, and the subnet must be the same. The last "octet" of the IP address can NOT be the same, as this is the identification number of the device on the network. The gateway, primary DNS, and secondary DNS do ***not*** need to be configured on the PC or the i^3, unless a local network is being used.

To assign an IP address to the i^3 simply press the system key, select "Set Networks", and type in the IP address and "NetM" (Subnet) necessary. As mentioned before, be sure to use a different last "octet", but the first 3 must match.

For this guide, 10.0.100.101 is used for the i^3 IP address. Hence, the PC IP address must be set on the same subnet, using an IP such as 10.0.100.x, where x is in the range of 1-254. ***Both*** subnet addresses must be set to 255.255.255.0.

Keep in mind that for controllers with 2 x LAN ports, these settings need to be on LAN1 as LAN 2 does not support I^3RMI currently.

N.B. If this method of connection with the i^3 is used, it will only be possible to browse to the website from the connected PC.

2.2 Checking the Connection

To ensure that the network has been established correctly, **"Ping"** the IP address of the controller. To do this, enter "cmd" into the Windows search bar. The following window will appear, enter "Ping 10.0.100.101" and hit return.

C:\Users' ☐ >ping 10.0.100.101

Pinging 10.0.100.101 with 32 bytes of data:
Reply from 10.0.100.101: bytes=32 time<1ms TTL=64
Reply from 10.0.100.101: bytes=32 time<1ms TTL=64
Reply from 10.0.100.101: bytes=32 time=1ms TTL=64
Reply from 10.0.100.101: bytes=32 time<1ms TTL=64

Ping statistics for 10.0.100.101:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms

Figure 8: Check LAN Connection with the controller

If there is a successful connection established, the command will return a response such as *"Reply from 10.0.100.101: bytes=32 time=1ms TLL=64"*.

Now that the user has established a connection with the router and once the IP of the controller has been configured on the same network as the router, it is possible to browse to the controller's IP from the mobile device. In this way, programs can be loaded to the controller, Web files can be transferred via FTP to the controller and website created on the micro SD can be viewed.

2.3 Connecting to the controller using the Connection Wizard

Once a connection between the PC/Laptop and the i^3 has been established, and confirmed using a "Ping", communications can now be set up between i³Configurator and the controller. In i³Configurator, go to 'Controller>>Connection Wizard'. Select "Ethernet" and then "Next". Type in the IP address of the controller "10.0.100.101", make sure that Mode is "ETN Ethernet Mode", and the Port number is "18501".
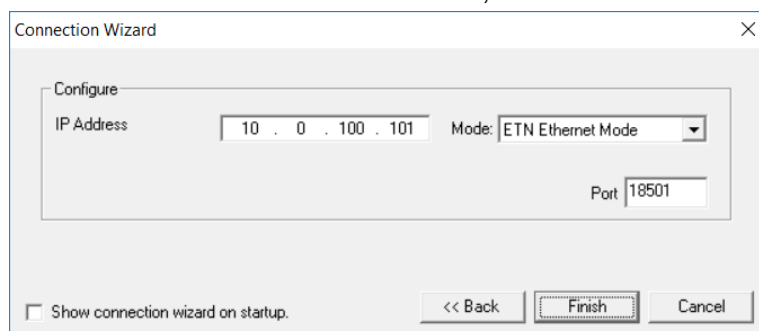

Figure 9: Connection Wizard Setup

Now click "Finish". A connection is now made to the controller and it will be evident in the bottom right of the screen. "Local" and "Target" should both show a number.
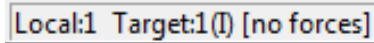
If "Target" is not the same number as "Local", in i³Configurator press 'Controller>>Set Target Network ID'. Type in the same number as the Local ID, press "OK".

Click "Yes" when the prompt appears to "auto configure", and then press **"Auto Config"** on the right-hand side of the hardware configuration screen. Now the model/series, and the IP settings of the 'LAN Config', in the Hardware Configuration, is the same as the controller.

Note: If a connection does not appear to be established, even after the connection wizard and target ID is setup, start an 'Auto Config' from the 'Hardware Configuration' regardless. If everything has been set up correctly, the i^3 model should be identified.

2.4   Creating the i^3 Screen

Now that the demo project for the i^3 has been opened ("cx i^3RMI") and a connection has been established to the controller, open the screen editor, under 'Screens>View/Edit Screens', to view the display for the i^3 application.

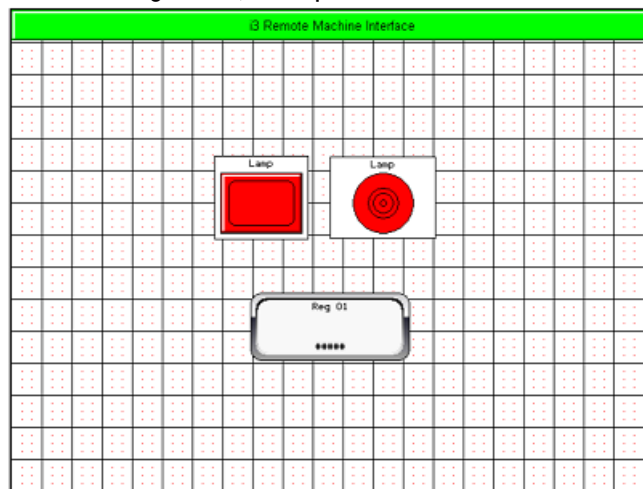A simple screen, as shown below in figure 11, will open:

Figure 11: I³ simple button/lamp screen

Assign the lamp and button both to a "T" bit. In this instance "%T001" was used. The button "Enable Lamp" is set for toggle, although momentary would work as well.

3   Level-Based Access

Level-based access is one of the new functionalities to be available in the latest i³Configurator release. It allows a list of users to be created and configured with their associated passwords and access levels.

Graphics objects on the user screens can also be configured to have an associated access level. This level will determine which users can interact with this screen object, based on their own access level. For example, if a touch button is configured to have a user access level of 4, only *i³* users that have logged in as a user with access level 4 or higher can select this button object.

To assign an access level to a graphics object, double-click on the object to open the object's properties window. At the bottom of the window there is a button called 'Access>>>', as shown in figure 12 below. Upon clicking this button, a window opens in which you must select
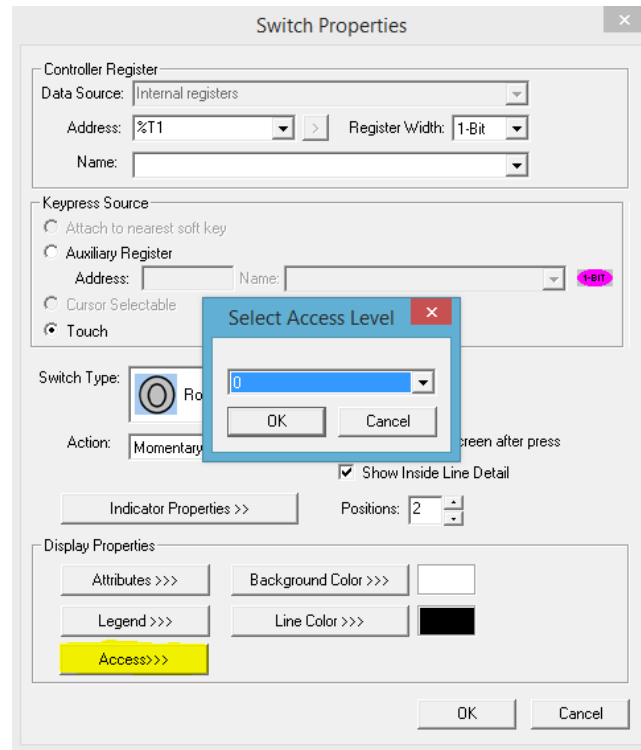

Figure 11: Assigning an Object's Access Level

the desired access level for the object. Access levels from 0 to 7 are possible.

The table of users, their passwords and access levels are set up via the graphics editor. Select the 'Config' tab and choose 'User Security Configuration'.
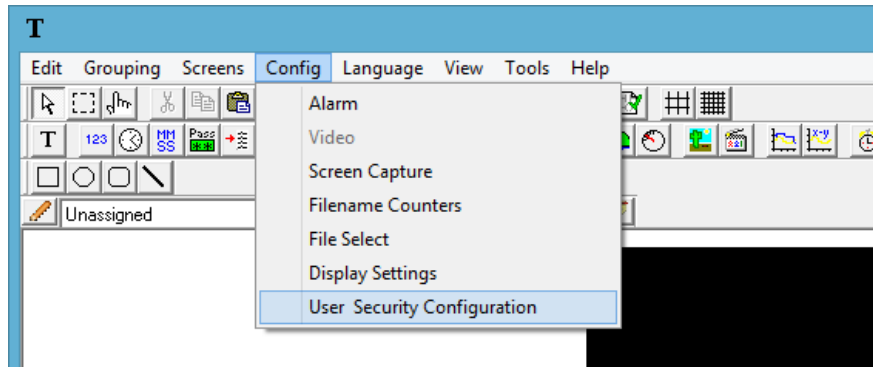
Figure 12: Where to Configure Users and Access Levels

This will open a blank configuration table. To configure a user, select the 'Add User' button and the following window will open. Create a username, password and assign an access level to the user. Here an access level of 0 was selected, which is the lowest level of access. Access level 0 is the default access level for all graphics objects unless configured as otherwise.
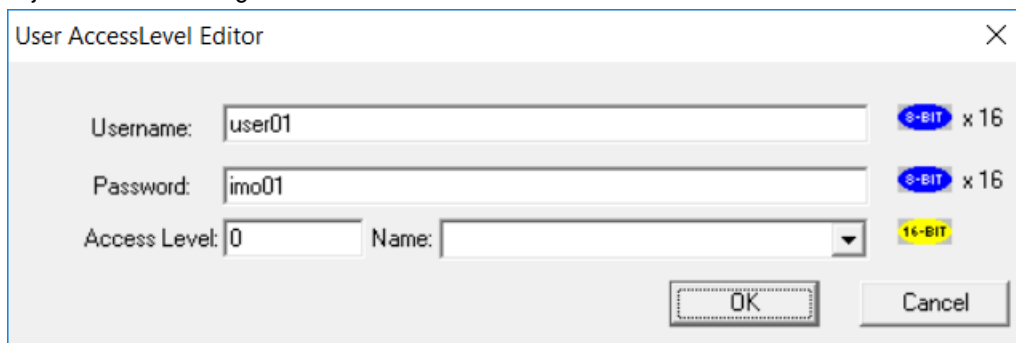
Figure 14: Adding a User

Up to 255 users can be configured and there are 8 different access levels, 0-7. Figure 15 below shows the table of configured users. There is also an option in this window to set the timeout for the login session. In the image below this timeout is set to 5 minutes which means that if a user is logged in and is inactive for 5 minutes or more, the i^3 will automatically log the user out. Also ensure that the check box for the WebMiSupport is also ticked.

Register addresses can also be used for User and Password configuration. However, this is not supported currently in the i^3RMI webpages

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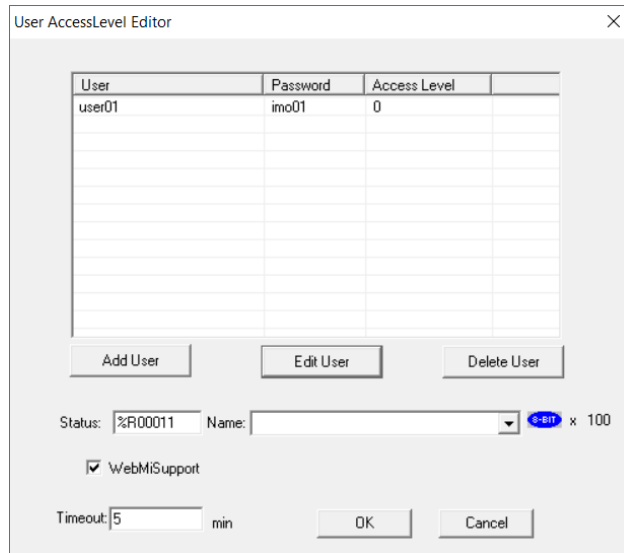
Figure 15: Table of Configured Users

There is a dedicated screen object in order to allow the i^3 user to login with a particular access level. This object contains fields for both the username and password and once a particular user has logged in, the object will also display the currently logged in user. This graphics object is shown in figure 16 below.

Figure 16: Level-based Access User Login Object

To create this object on a user screen, select the 'Password Data' object from the toolbar in the graphics editor. Once the object is placed on the user screen, double-click on the object to open the object's properties window.

The following window will appear.
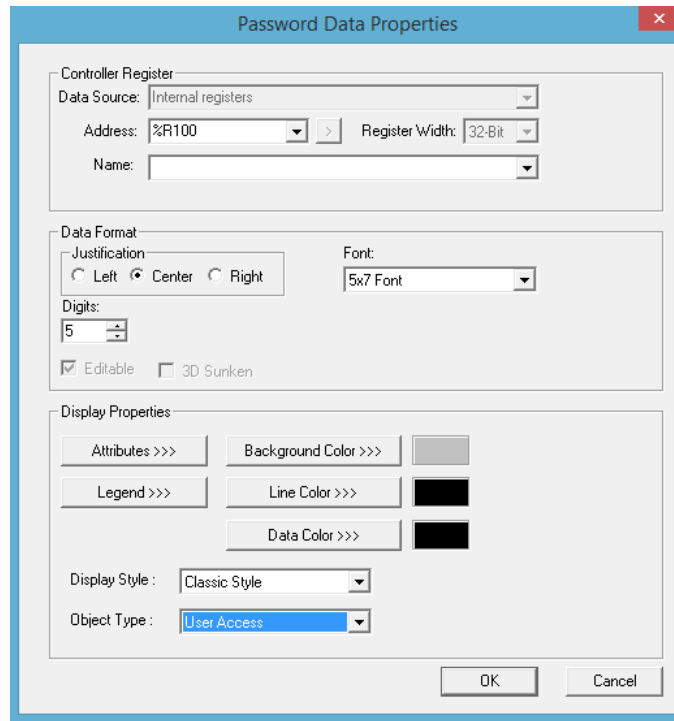
Figure 17: Password Data Properties

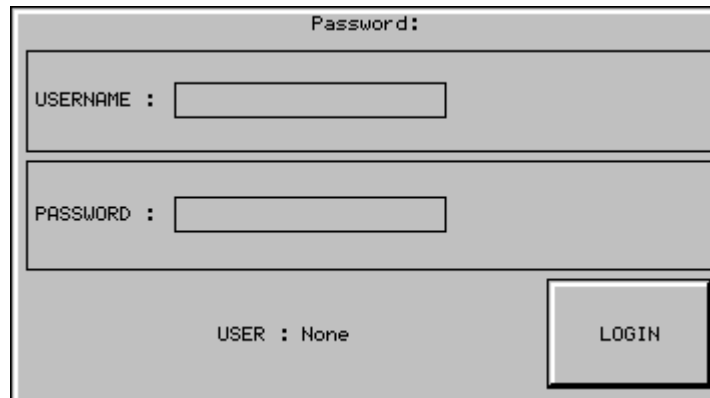To configure the password object for user-access login, select 'User Access' from the 'Object Type' dropdown list, as shown in figure 17 above.

N.B. It is now essential for *i*³RMI to configure at least one user in the 'User Security Configuration'. If the application does not require various users and access levels, simply create one user with access level 0. This user will be able to interact with all screen objects since the default object access level is 0. There is not a requirement to use the password graphics object. User Security Configuration for the *i*³RMI website files is completely independent to any that is used for the controller program

For the purposes of this demonstration, the *i*³ demo program has been configured with one user with a level access of 0 and a username and password of 'user01' and 'imo01' respectively.

4   Enabling FTP on the *i³*

For *i³*RMI, the SD card on the *i³* is used to host the Website files and graphics and these can be transferred to the controller using FTP. Hence, before the Web files can be sent to the controller's SD card, the controller program needs to be configured to allow FTP communications.

Within the opened *i³* project, "cx *i³*RMI", the LAN port settings must be configured to allow FTP communications. In i³Configurator, click on 'Controller>>Hardware Configuration'.   The hardware configuration screen now appears.

If not already done so, select the ***"Auto Config"*** button to ensure that the controller I/O type matches that in the i³Configurator application. Next, click on the "LAN1 Config" button to configure the *i³* for FTP.
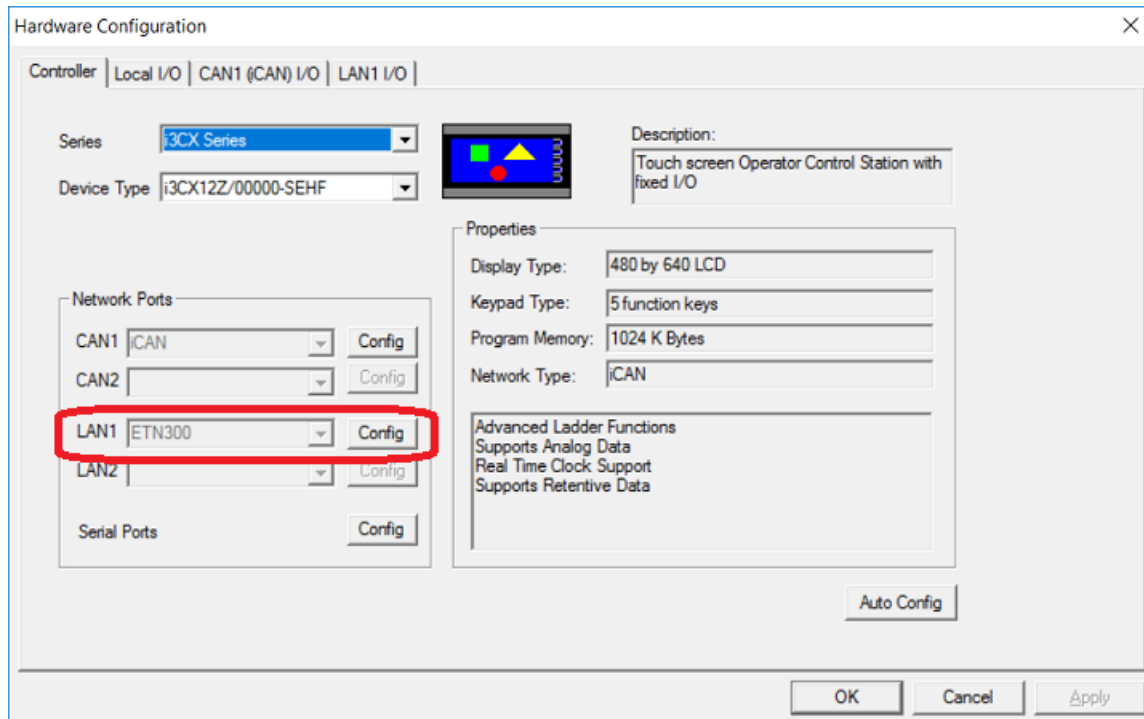
Figure 18: *i³* Hardware Configuration

In the next screen, there are three items of interest; the IP address, net mask, and FTP (File Server). Duplicate the settings shown in Figure 19.

The IP address here must match that which was previously given to the controller manually through the system menu.
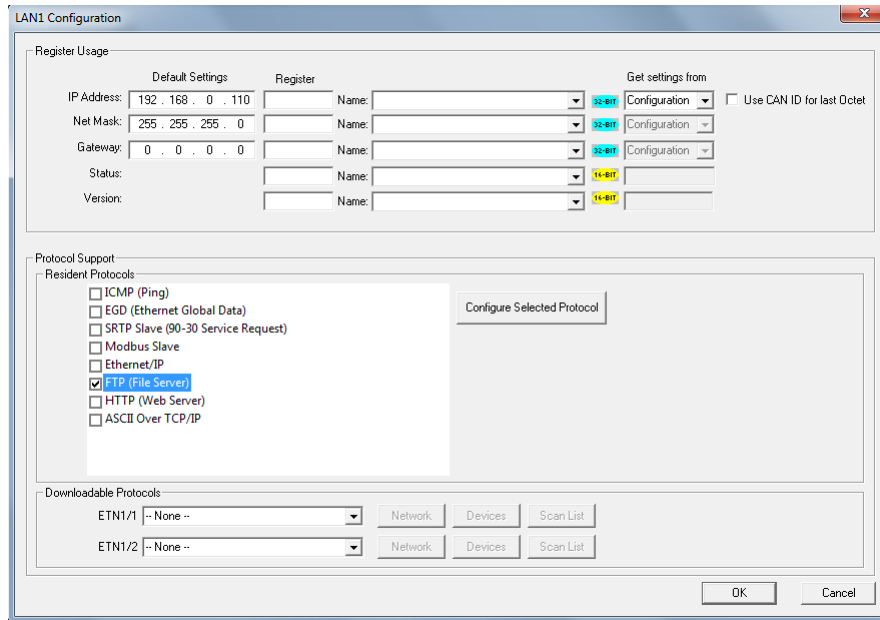
Figure 19: LAN1 Configuration

Highlight "FTP (File Server)" and click on "Configure Selected Protocol". Figure 20 should appear.
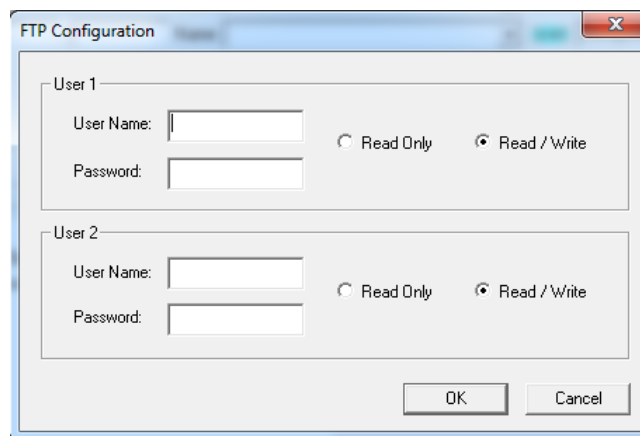
Figure 20: FTP Configuration

For User Name input "user" and for Password input "imo" for User 1 only. Note that 'admin' is only used for the purposes of this demo and should be changed later to a username and password of choice. Leave the settings to "Read/Write". This will keep the FTP simple until further authentication is desired. Once the User Name and Password are set, press "OK". Also "OK" out of the hardware configuration.

5   Downloading the preliminary setup to the controller

Before publishing a web page to the i^3, the i^3 must have a download made to it. With an Ethernet connection established and the settings described in 4.0 for FTP completed, the i^3 program is ready to download to the controller.

In i^3 Configurator click 'Program>>Download'. Accept the "SmartLoad" options as shown in figure 21.
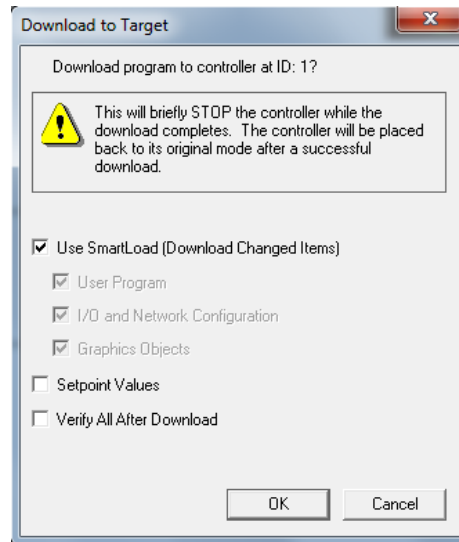
Figure 21: Smart Download to Target

Accept the screen advising the user to take caution when downloading over Ethernet. If done correctly the i^3 will have the button/lamp program downloaded. FTP is enabled, and the controller is now prepared to have a web page downloaded.

N.B. Ensure that the controller is put in *"Run" mode*. To do this go to 'Controller>>Run/Monitor' from the main i³Configurator screen *or* from the System menu on the controller select "View Status", scroll to "Mode". Press "Enter", use the arrows until "Run appears and hit "Enter" again to select "Run" mode.

6   SD card preparation for Hosting Website

Insert the formatted Micro SD card into the i^3. The SD card is required to store and serve the webpage. Hence, when the HTML5 and SVG files are transferred via FTP to the controller, they will be saved here for the controller to have access to.

Note: The webpages stored in the SD card are not the same as the controller program and therefore need not look the same. Therefore, **_another project for designing the website can be created_**. This is detailed in the following sections.

7   Creating the i³Configurator Web Site Project

Once all of the i³Configurator application has been configured and downloaded to the device, we can start to consider designing the Website to be hosted on the SD card.

First, close out of the i^3 application "cx i^3 RMI web".

Open the i³Configurator application, provided in the Beta package, called "cx i^3 RMI web". This file is used to create the Website graphics.

Go to 'Controller>>Hardware Configuration' select the Series type **_'Web Designer'_** and choose a Web Designed model for i^3. There are three different screen resolutions, for i^3 Web Design, to choose from. Choose the resolution that is closest to that of the most commonly used viewing device for the website.
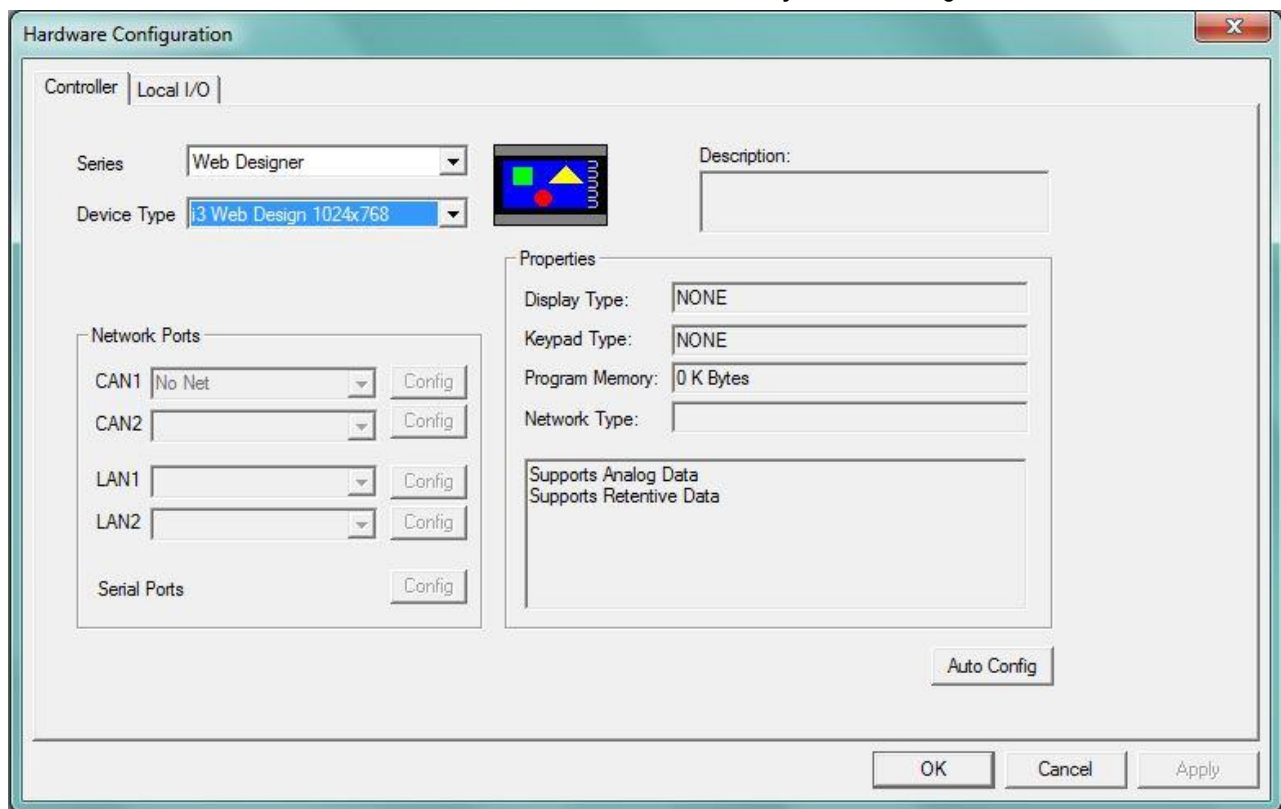

Figure 22: Hardware Configuration for Website Graphics Program

This allows the user to create their own unique HMI screens which do **_not_** have to match the i^3's screens. However, the user must use registers corresponding to the i^3 program registers when designing the webpage.

Then select "OK", without doing an "Auto Config", to save the configuration and return to the main i³Configurator screen.

Now go to the i^3 Configurator graphics editor to begin creating the Website graphics.

A lamp and a button object are added to the Website page to correspond to the objects in the i^3 application. Double-click to expand the Properties window. Assign the value %T1 to both objects, as done previously for the i^3 graphics.

7.1   User Security Configuration

It is necessary for a i^3RMI application to configure at least one user in the 'User Security Configuration'. For this demonstration, which uses a free license, one user with level access 0 has been configured. Both the username and passwords are set to 'User01' and 'imo01'. This user is set up in the same way as in the i^3 program, via the 'Config' tab in the graphics editor and 'User Security Configuration'.

Note: It is the username and password of one of the users configured in the 'User Security Configuration' that must be used when browsing to the Webpage from the internet browser.

7.2   Publishing the Web Page to the *i³*

Now we can publish this simple project to the Micro SD card on the *i³* device. To do this, select the *'Publish Web Site'* option in the 'Edit' tab of the Graphics Editor.
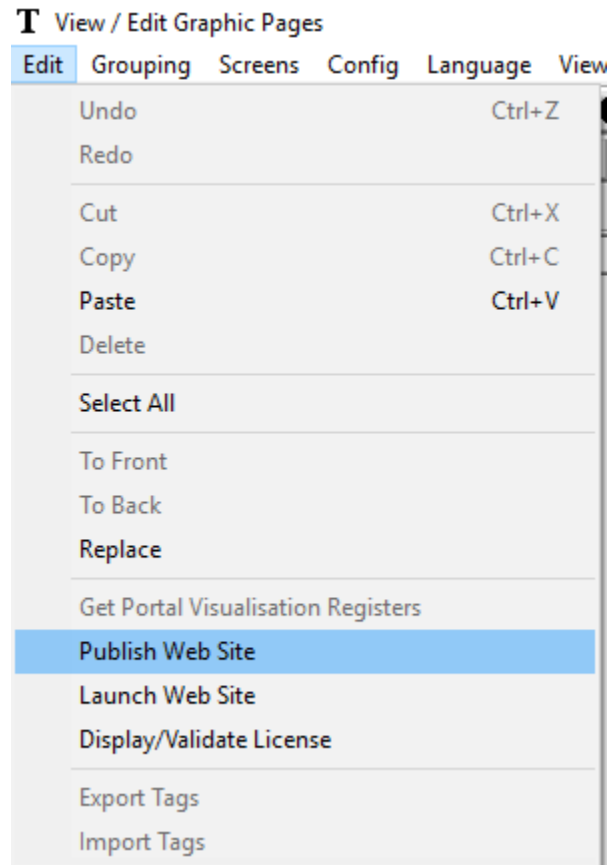
Figure 24: Publish Web Site

This initiates the publishing process. First of all, select the FTP Target IP for the controller. Use 'admin' for Username and Password as this has been configured previously in the controller program.
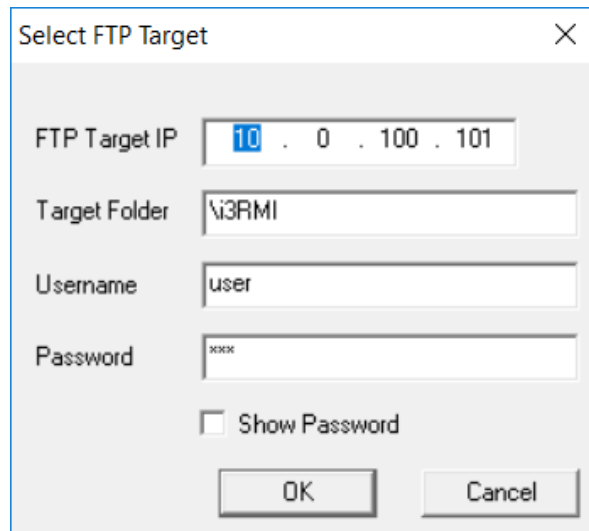
Figure 25: Publishing via FTP

If the controller is not currently licensed for *i*³RMI webpages the following licensing screen will be shown.
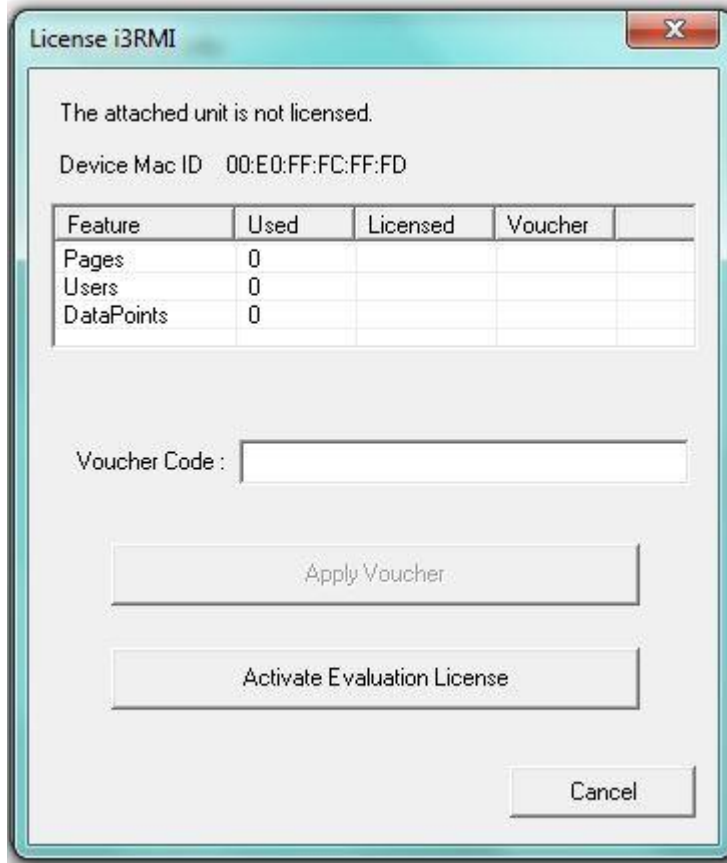
Figure 25: Licensing options

The MAC ID will be displayed that matches the unit and a voucher code allotting the number of pages, users and data points will be supplied. That can then be applied, shown in fig.25.

8   Licensing the *i*³ controller

*i*³RMI Licensing

Before licensing please ensure that the controller has a Micro SD card inserted to the Removable Media slot.

Select apply and the license is connected to the controller. The license file is renamed to 'Firmware.lic' and is downloaded to the uSD card in the controller.

Device Mac ID   00:E0:FF:FC:FF:FD

Feature	Used	Licensed	
Pages	0	5	
Users	0	5	
DataPoints	0	25	

09-NOV-2116

Figure 33: License Status

Select Continue to convert all of the graphics to SVG (Scalable Vector Graphic) files. This converts all the graphics pages in the project to standard SVG files – one file per used screen in the I³Configurator program. The files are stored in directory "I³Configurator\SVGExport and I³Configurator\WebFiles\Export" in the "My Documents" folder on the PC.

SVG Files Created.

Would you like to encode these for use on i3 Web Server?

Yes   No
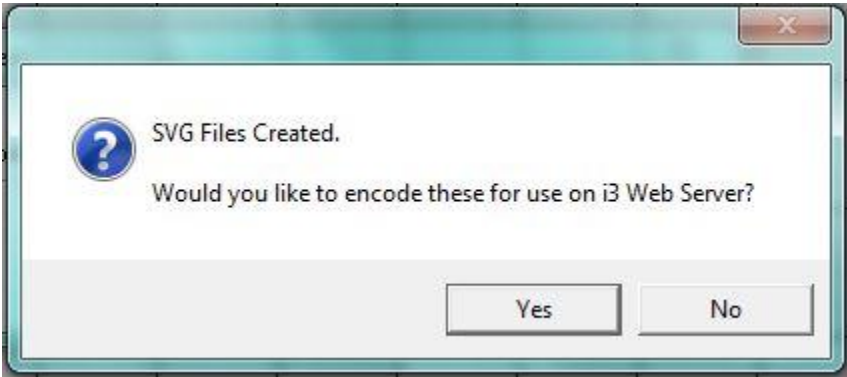
Figure 34: Create SVG files

Select yes to encode for i^3 Web Server. The Web Site is published.

Web Site Published.

Would you like to FTP these files to the Web Server?

Yes   No
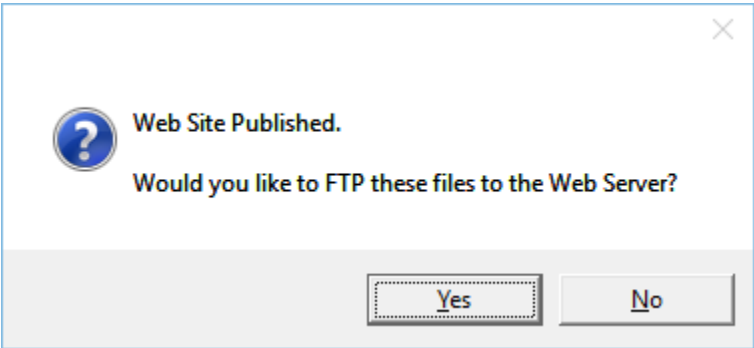
Figure 35: FTP files

For our simple example, just one file is created:

Libraries > Documents > *i³*configurator > SVG Export and *i³*configurator > web files > export
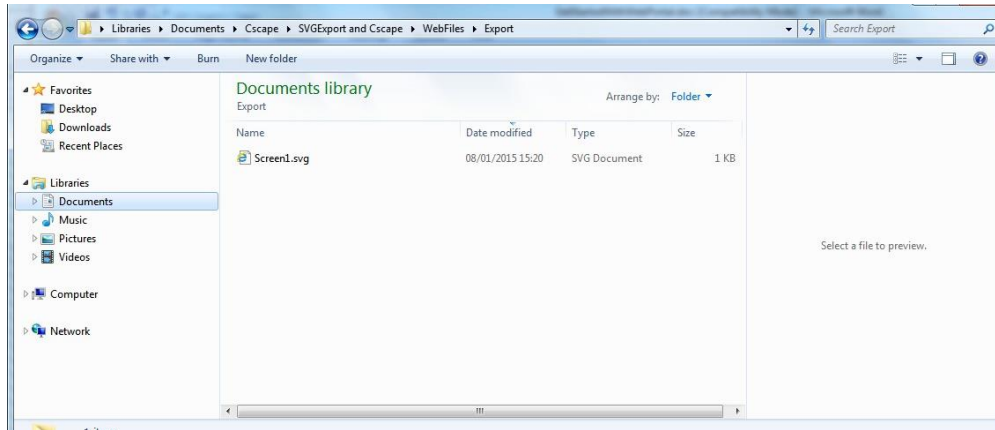
Figure 36: Webpage SVG File Location

Advanced users may elect to modify the SVG directly at this point, to incorporate links to other web resources, or add other content.

On completion of the encoding, the following dialog box is displayed:
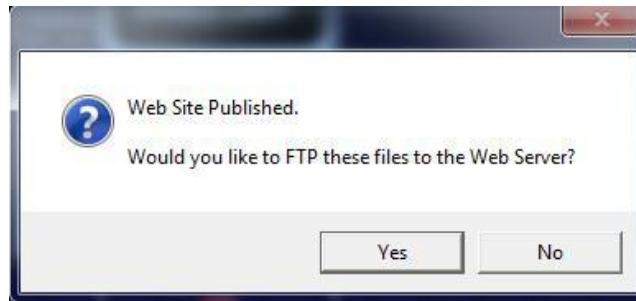
Figure 37: FTP enquiry

Selecting "No" at this stage, means that the encoded files will not be transferred to the SD card in the *i³* using FTP. However, the encoded file set is stored in directory "I³Configurator\SVGExport and I³Configurator\WebFiles*I³*RMI" within "MyDocuments". Hence, as an alternative to the FTP process, the *I³*RMI folder at this file location could be copied directly to the SD card and then inserted into the *i³* afterwards.
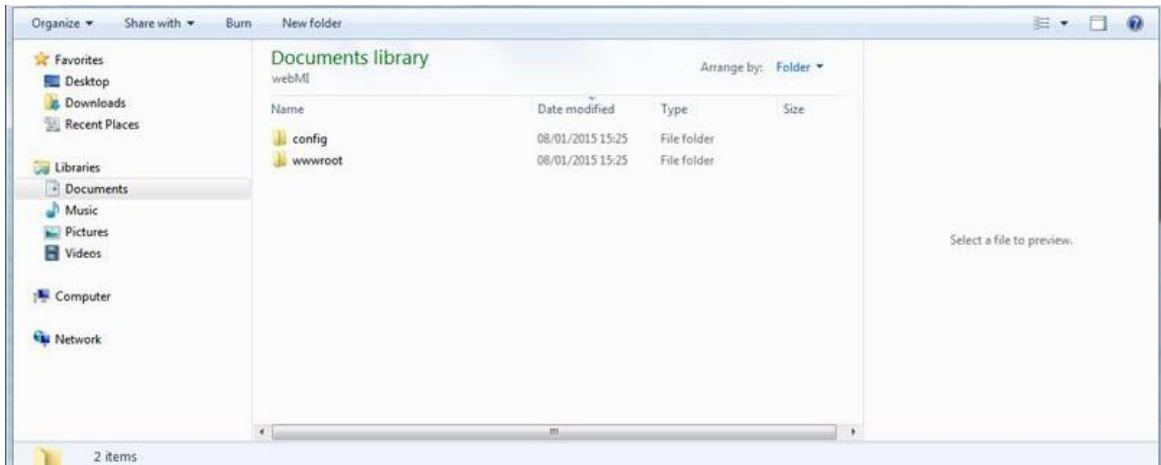
Figure 38: Location of Encoded Website Files

Libraries>documents>*i³*configurator>SVG Export and *i³* configurator>webfiles>WEB MI

This file set contains a direct image of the files which will be loaded in to the MicroSD card on the *i³* device. If required a backup of these files may be made at this point.

Clicking "Yes" to initiate the FTP transfer displays the following dialog box:
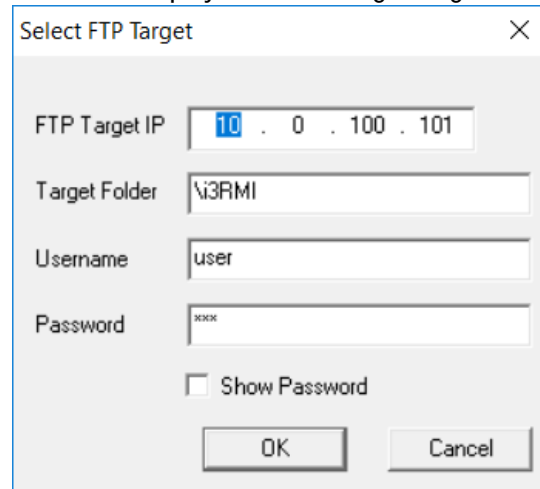
Figure 39: FTP Target Configuration

The 'FTP Target IP' is the IP address of the *i³*. Leave the Target Folder as "\i³RMI", and be sure to use the correct FTP username and password, as configured in the *i³* application. In this demo program, both username and password are "user" and "imo". Once complete press "OK". The controller will create the specified target directories, and FTP the files from the PC to the *i³* Removable Media. This may take several minutes. Once complete the windows will close and the controller web site is ready to be viewed.

9 Viewing the *i³* Web Page

Now that the controller has the correct firmware, the correct program, and has a web page published to the removable media, the web page can be viewed. Most web browsers should work however ones that have been tested include: Mozilla Firefox, Chrome, Safari and Internet Explorer.

With the PC still on the same network as the controller open a web browser. Type in the IP address of the controller in the URL bar, browse to this page and the *i³* screen that was published as a web page should appear.

Note: A username and password prompt will appear. It is the username and password of one of the users configured in the 'User Security Configuration' that must be used here. The user who has logged into the *i³*RMI Webpage will only have rights to interact with objects that are assigned an 'Access Level' equal to and lower than his own assigned access level.
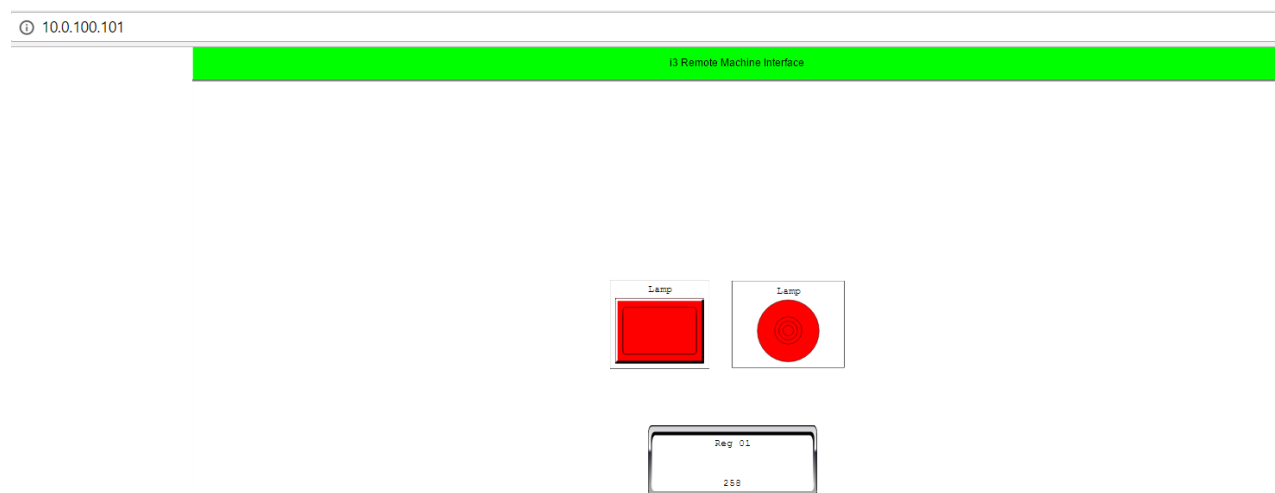
Figure 40: Browsing to Website

As it can be seen in Figure 40, the web page can be browsed from a computer on the same network by simply putting in the IP address of the controller in the URL bar.

If there are various users configured for Level-based Security, to log in as a different user you must close out of the browser and then browse to the *i³*RMI unit again to re-enter another username and password.

Also make sure to read and accept the terms and conditions to view the web page.

Appendix A: Connecting to *i³* using an Access Point.

In applications in which the user wishes to connect wirelessly to the *i³*, an access point can be used. The access point creates a new network including itself, the controller and any mobile/ wireless device that connects to the wireless network. In this way, any user connected to the wireless network provided by the access point, can browse to the *i³* wirelessly.

For demonstration purposes, a TP-Link Nano-Router can be used.

Figure 44: TP-Link Nano-Router

This device has been preconfigured with an IP address of 192.168.0.100 and a default Subnet mask of 255.255.255.0. Thus, the IP address of the *i³* must have the same first 3 octets as the IP address of the router and the same Subnet mask of 255.255.255.0.

For example, the IP address of the *I³* must be set to 192.168.0.x, where x is in the range of 101-199 and cannot be equal to 100.

Connect the Ethernet port of the access point to the LAN1 port on the controller. To power the TP-Link, connect the micro UBS port of the Router to the USB port on the *I³*.

Set the IP address of the *I³* to one within the range specified above. To do this, enter the System menu of the controller and select "Set Networks". Using the arrows, scroll down to "IP" and press "Enter". Type in the desired IP address for the controller, ensuring that it is in the range previously outlined, as shown in figure 35 below. For this training document, the controller IP address was chosen as 192.168.0.110.
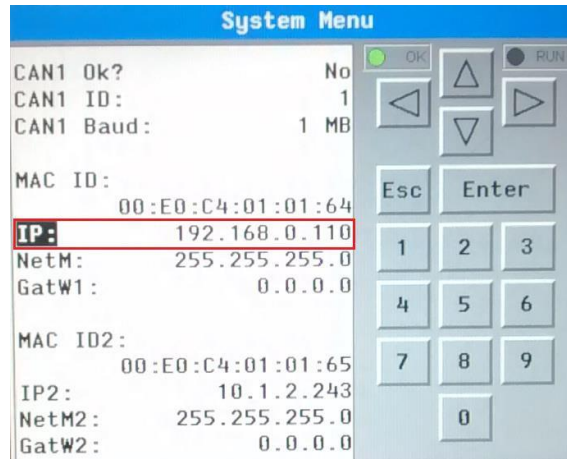
Figure 45: Changing i^3 IP Address

To connect your wireless device to the TP-Link network, go to the network settings or Wi-Fi settings on the wireless device/ laptop/ PC and select the network called "WEB/i^3". To join the network, enter the SSID password, which has been preset to "IMO/i^3".

Appendix B: FAQs

Q1. Do I need to be careful about licensing devices with two Ethernet ports?

A1. We recommend that you license and use i^3RMI on LAN 1 of i^3 controllers with 2 LAN ports.

Q2. Is there a practical limit on the number of simultaneous remote users on a single I^3? A2. A

maximum of 4 users can be simultaneously logged on to i^3RMI from different devices. **Q3. What**

happens if the SD card fails?

A3. You will have the opportunity to download the license through the same process that you used initially to a different microSD card. Or, you can restore from backup if you have previously backed up the microSD.

Q4. Will the synchronized mode mean I need more data points?

A4. While in theory the synchronized mode will not increase the number of data points, the practical nature of publishing the entire project would include all data points in the project. This could potentially be a very large number.

Q5. Will i^3 RMI be replacing i^3 Portal?

A5. While we have no immediate plan to stop supporting i^3 Portal, our anticipation is that i^3 RMI will be able to support almost all of the requirements that were previously addressed by i^3 Portal.

Q6. Can you connect an i^3E to a computer with USB, and the computer to internet via Ethernet when doing validation etc?

A6. Any connection method (serial/can/Ethernet/modem) used for programming an i^3 can be used to validate/update the license. Ethernet MUST be used for FTP of the project files (although transfer of the files by physically copying them to the uSD card is an alternative).

Q7. If I want to use my own HTML5 code, can I still use the HTTPS (TLS) functionality to encrypt the communication?

A7. At this time, this functionality is not supported. We will publish additional details regarding this functionality at a future time.

Q8. If we send emails that have been programmed, does it require more data points then an off/ on button?

A8. This would be entirely dependent on how the logic was written in the controller. However, if written with this in mind, I am sure that you could limit the number of data points to one or two points.

Q9. If I need to expand the number of points or users used, will I need to pay full price for the license or is there an upgrade price?

A9. We will only charge you for the difference between the cost of the original license and the cost of the

new license.

Q10. What version of I³Configurator do I need?

A10. *i³* Configurator version 9.72 SP2, and the controllers must be updated with Firmware version 14.22.

Q11. Do we still need to create a new project web designer?

A11. Once *i³* RMI is licensed, then you can simply publish the entire as web pages directly from the Graphics Editor portion of *i³*Configurator.

Q12. Do you need to upgrade firmware of older controllers in order to use i³ RMI?

 A12. Yes – the minimum supported firmware version is: 14.22

Q13. If an HMI controller does not have an SD card, is it possible to License? Also, once a license is on an SD card, can that card still be used in another unit for cloning purposes or is that SD card have to stay in the original HMI controller?

A13. The license resides on the microSD card that is in the controller. Once the license is loaded and the controller is running the license is transferred to the flash memory of the controller.

Q14. Are access levels available for use in standard use not related to *i³* RMI?

A14. Yes, the object based level security was implemented for all *i³* Configurator applications.

Q15. Will all new controllers be *i³* RMI ready?

 A15. For sure – all of the controllers that are currently shipping have the proper firmware to support *I³*RMI.

Q16. Before what date will firmware need to be updated in order to use *i³* RMI?

A16. The controllers must have Firmware version 14.22. This firmware started shipping on controllers at different times, depending on your location.

Q17. Can more than one person use a single user login?

A17. Yes

Q18. Are there any requirements for the Micro-SD card such as memory capacity?

A18. The only size requirement would be that the microSD card is large enough to support the project. In fact, a 2GB card should be large enough to fit most projects.

Q19. So, 2 people can see the same screen at the same time?

A19. Yes and when the synchronize button is checked, the screen on the controller and the remote screens will be mirrored.

Q20. What happens to license files that are saved on the SD card if the unit fails and has to be replaced? Can you move the license/voucher to another unit?

A20. Again, this is a time when you should go through your normal IMO ordering process to have this license moved to a new unit.

Q21. Are you coming out with an app?

A21. We have no plans to develop an app currently. We feel that our current implementation, including Scalable Vector Graphics (SVG) and HTML5 allows for complete flexibility to any device regardless of manufacturer or vintage of the device; providing that the device is capable of supporting a web connection.

Q22. Were the license prices for lifetime, year, month?

A22. Each i^3 controller is licensed individually and that license is valid for the life of that controller.

Q23. The controller has two LAN connections and thus two MAC IDs, can one license both MAC IDs?

A23. No. We recommend that you use LAN1 to license and operate I^3RMI on controllers that have 2 LAN ports.

Q24. How do you address responsive design for access with cell phones?

A24. By incorporating SVG and HTML5 all of the pages that are developed within i^3 Configurator are completely responsive. Including pages that may have previously included non-scalable bitmaps.

Q25. How do I connect to a controller that's behind a router? Are there default ports?

A25. i^3 RMI serves Web Pages on http port 80, or https port 443 if a certificate is loaded to the unit. You can contact automation@imopc.com

Q26. Can the free license be used on several controllers, or does each unit need to have a separate license?

A26. Regardless of the license size, each controller is licensed individually.

Q27. Can tags be only visible by higher access levels?

 A27. Yes, the object level security is intended to allow developers to provide specific capabilities based on security levels.

Q28. After a license is transferred, how do you update firmware?

A28. There is no change with or without the license. Please follow the standard firmware upgrade procedure.

Q29. If a controller fails, is there a way to transfer the i^3 RMI license to a replacement controller? A29.

Please go through your normal IMO channel to process a change.

Q30. I am guessing you have to be web connected to register a controller. Is this true?

A30. While the controller does not require to be connected to the web, a web connection is required to process

the voucher.

Q31. Is the unlimited license for 1 controller, or is it for 1 company, and as many controllers / users / etc. as needed?

A31. Regardless of the license size, each controller is licensed individually.

Q32. Are we able to transfer a license from one to another?

A32. While there is a process to make this happen (by contacting the normal IMO channel) this process is designed.

Q33. It was mentioned that the pages are served from the micro-SD card. Does that mean i^3 pages are not stored with the standard program as standard screens/pages are stored?

A33. Correct. All of the pages are converted to scalable vector graphics and then developed into an HTML5 web format and downloaded to the microSD card.

Q34. If I'm using an external modem to connect to the PLC, do I need to establish a VPN?

A34. This is a personal question based on the security and procedures of each individual user. i^3 RMI will work with almost any type of connection.

Q35. Can it email alarms?

A35. While i^3 RMI cannot be used to email alarms. That functionality is and has been built into all of the i^3 controllers for many years.

Q36. What about other i^3 controllers?

A36. Currently, only the i^3 CM, i^3 CX, i^3 E & i^3 DX support i^3 RMI. However, the i^3 X products are undergoing testing now and should have I^3RMI support shortly. All future products will support i^3 RMI.

Q37. Is there a way to know when anybody is logged in and know who is logged in? Something like a register or bit on the I^3?

A37. This is not currently supported, although it is our intent to provide a level of connection feedback within our next release of i^3 RMI.

Q38. If you have two objects on the page that are referencing the same register (like a numerical value and a bar graph of the same one), does that still count as 2 data points?

A38. No, that is considered only a single data point

Q39. How is an analog trend displayed if the i^3 scan rate is usually faster than the internet refresh rate?

A39. While this may be true in some cases, in other cases the refresh rate of the network may be fine. In either case the values will be updated as quickly as the network will allow.

Q40. What happens if different users try to take control at the same time?

A40. Last access wins. Some thought is required by the system designed when dealing with creating user accounts and making sure access levels are correctly configured.

Q41. Will you be able to see trend data on i^3 RMI in the future?

A41. It is our intent to have trend data incorporated into i^3 RMI in the next release. However, trend data must also be configured on the controller and logged on the microSD for this to be possible.

Q42. Can the HTML5 i^3 RMI pages be modified with embedded Java code?

A42. While this may be possible, IMO does not support this at this time.

Q43. What happens if you lose the micro SD card with the license registration?

A43. The license can be reloaded to the same controller from the licensing portal. **Q44.**

Can we still use web pages we develop on our own without using i^3 RMI?

A44. The original i^3 http functionality has not changed and continues to remain active.

Q45. Are security levels 1-7 predefined or are they set up during programming? If predefined, please share the functionality / capability access chart?

A45. These are configurable by the developer.

Q46. Can the license file be deleted (intentionally or inadvertently) via the controller? A46.

No the license file is encrypted and then stored to the flash memory of the controller. **Q47. Can**

you remove the license agreement when you initially log into the i^3?

A47. Not at this time. This agreement is designed to allow users to recognize that there may be a remote connection to this controller.

Q48. Can't you use an existing program display? Or do you have to create a second one for the web version?

A48. You can use existing displays from the project in the unit – you are of course limited to the resolution of the units screen in that case.

Q49. Access (logging, etc) to/from uSD while accessing webpages?

A49. Enhancements to this (Support Removable Media Graphics object to support ftp of files) are planned for subsequent i^3 RMI releases.

Q50. I imagine that the Unlimited license is not transferable to multiple i^3 units, correct?

A50. Regardless of the license size, each controller is licensed individually.

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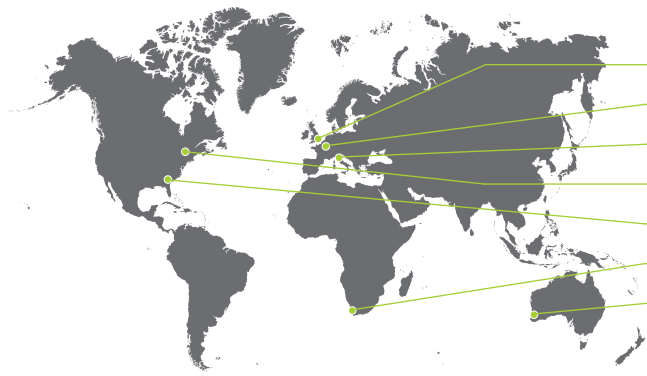Via Ponte alle Mosse, 61
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