

SAVR Communications Inc.

Software User Manual For FCC Qualification Report

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Notice:

This device complies with Part 15 of the FCC rules subject to the following two conditions:

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

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Warning: changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Software Manual

Screen Shot overview:

Described below is a brief overview of the various screens available in the SAVR Application Software.

Main Screen (Figure 1): This is the main screen that is initially displayed when the application software is started.

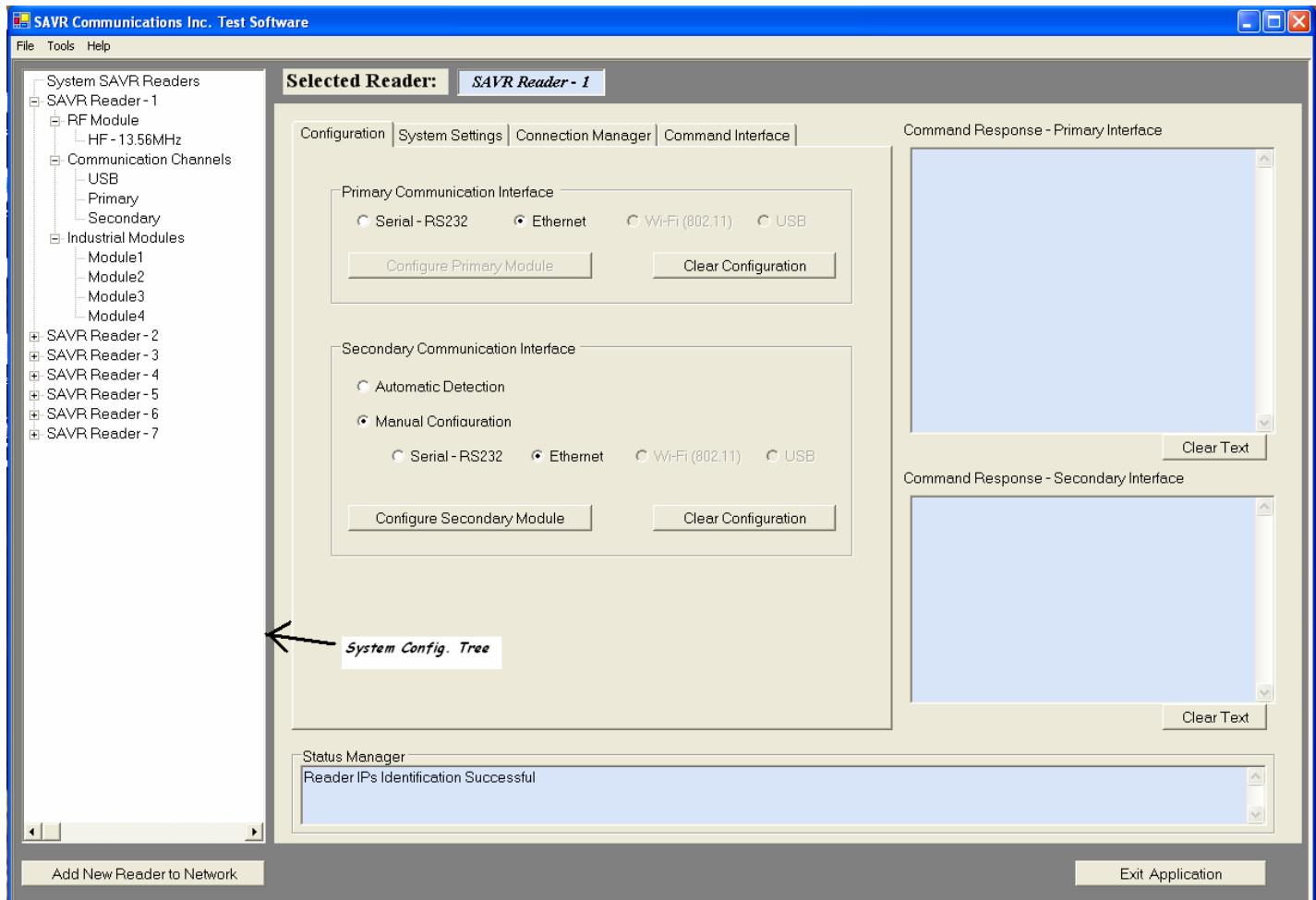


Figure 1

Main Screen Contents (Figure 1)

- a. **“System Configuration”** Tree which displays all the SAVR RFID readers that are connected to the computer/computer network. Each reader in the network can be individually selected, configured and given commands through the software interface. Additional readers can be added to the network by clicking the “Add New Reader to Network” button found below the “System Configuration” Tree.
- b. **“Selected Reader”** Text Box displays the current RFID reader being dealt with.
- c. **“Command Response-Primary Interface”** Text Box displays the response that the selected RFID reader transmits over the primary communication channel/module. Press the “Clear Text” Command Button below the “Command Response-Primary Interface” Text Box to clear this text box.
- d. **“Command Response-Secondary Interface”** Text Box displays the response that the selected RFID reader transmits over the secondary communication channel/module. . Press the “Clear Text” Command Button below the “Command Response-Secondary Interface” Text Box to clear this text box.
- e. **“Status Manager”** Text box displays the current status of the application.

Note: Different options are available in the middle of the screen depending upon which Tab (Configuration, System Settings, Connection Manager, Command Interface) is selected.

“Configuration” Tab (Figure 2): To make the initial communication to a desired reader, the primary communication channel must be selected in the configuration tab. i.e. if the reader you want to connect to has Ethernet as the primary communication channel (physically selected by the master/slave slide switch on the module), select the “Ethernet” Radio button. Once you make a connection (how to make a connection is explained later in the document), the RFID reader automatically detects and displays the secondary communication channel/module that is attached to the selected RFID reader. The configuration tab is displayed in Figure 1.

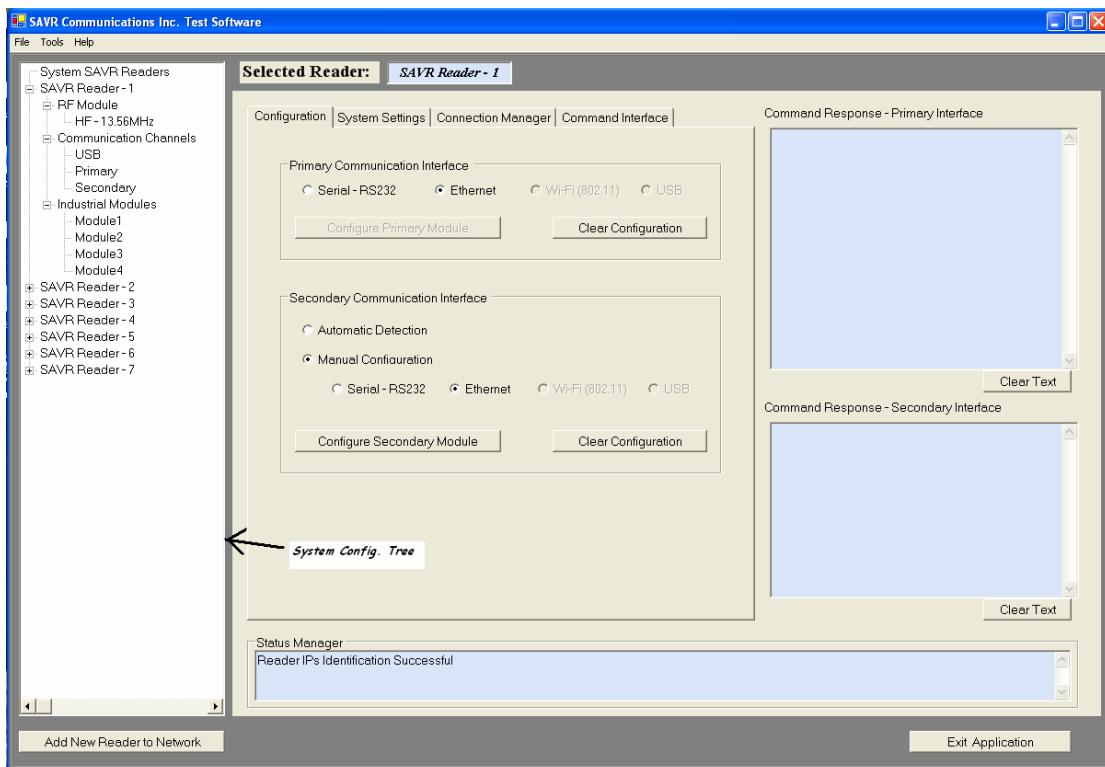


Figure 2

“System Settings” Tab (Figure 3): The System Settings Tab contains all the communication setting parameters for the Primary and Secondary Communication Modules. Once you select the primary communication channel of the given RFID reader, the “System Settings” Tab contains all the communication parameter options available for the respective communication channel. For example if you choose RS232 as the primary communication channel, options available are Port, Baud, Data Bits, Stop Bits and Parity. But if you choose Ethernet as the Primary communication channel, the options available will be IP Address and Port number.

Note: If you select the Ethernet as the primary communication channel to the selected reader but you are not sure of the IP Address of the RFID reader, go to the “Tools” Menu -> “Advanced” -> “Populate Mac IP Table” option. Please wait for a couple of seconds for the application to search for all the SAVR RFID readers connected to the Ethernet network. The progress of the search is shown in the Progress Bar on the bottom of the screen. Once the search is complete, all the connected Reader’s IP Addresses are available in the IP Address Combo Box.

The Secondary Module settings are shown only after the connection to the RFID Reader’s Primary communication channel is established.

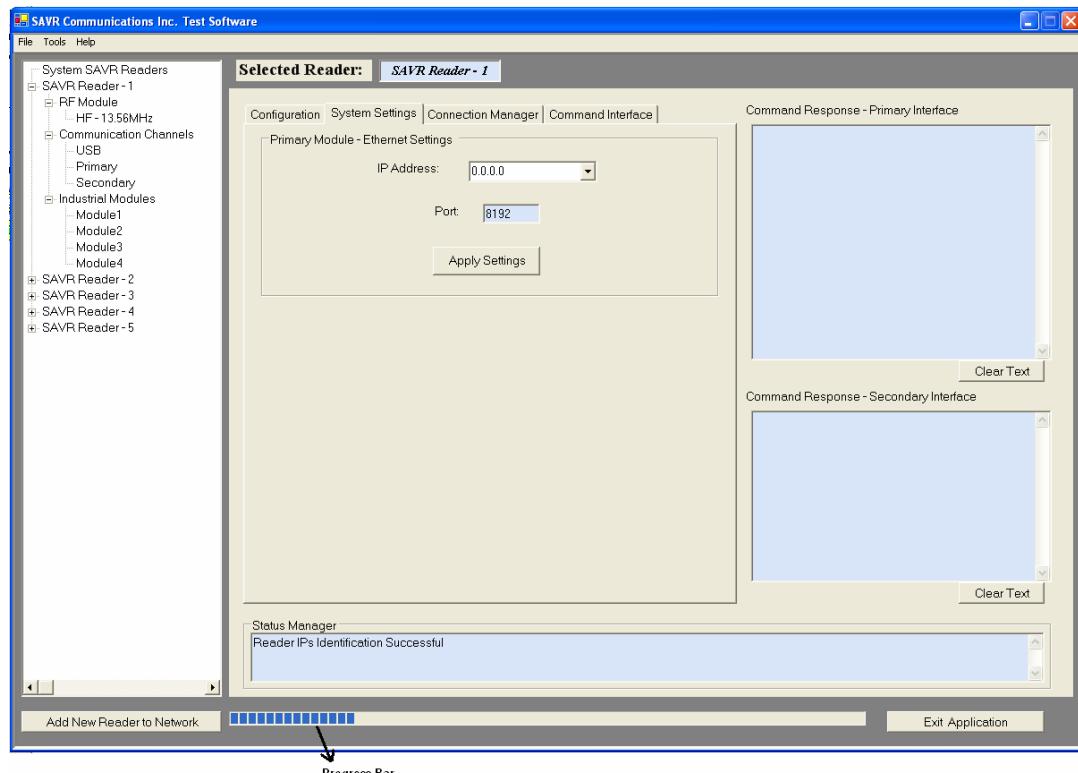


Figure 3

“Connection Manager” Tab (Figure 4): The Connection Manager Tab shows the connection status of the RFID reader. Press the “Connect” Command button to connect to the RFID reader and “Disconnect” command button to disconnect from the RFID reader.

Note: The Secondary module connection manager is shown only after the connection to the RFID Reader’s Primary communication channel is established.

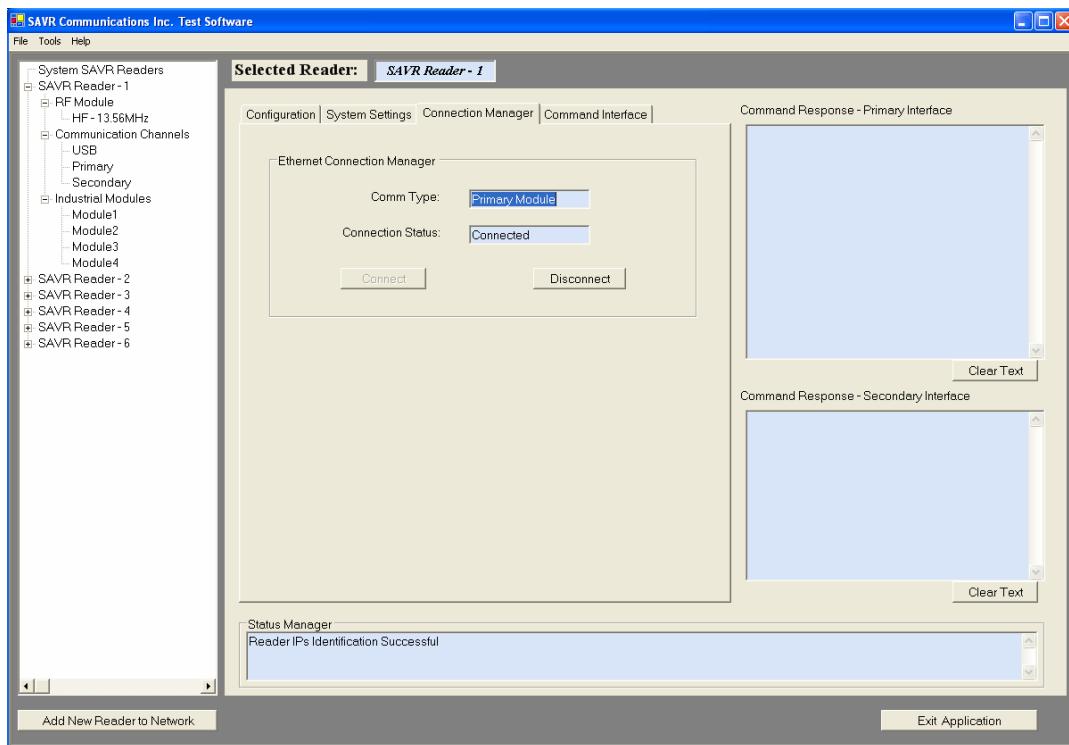


Figure 4

“Command Interface” Tab (Figure 5): Once the connection to the primary communication channel/ module of the RFID reader is established, all the commands to the RFID reader are given through the Command Interface Tab. (Note: RFID reader takes commands only over the primary communication channel.)

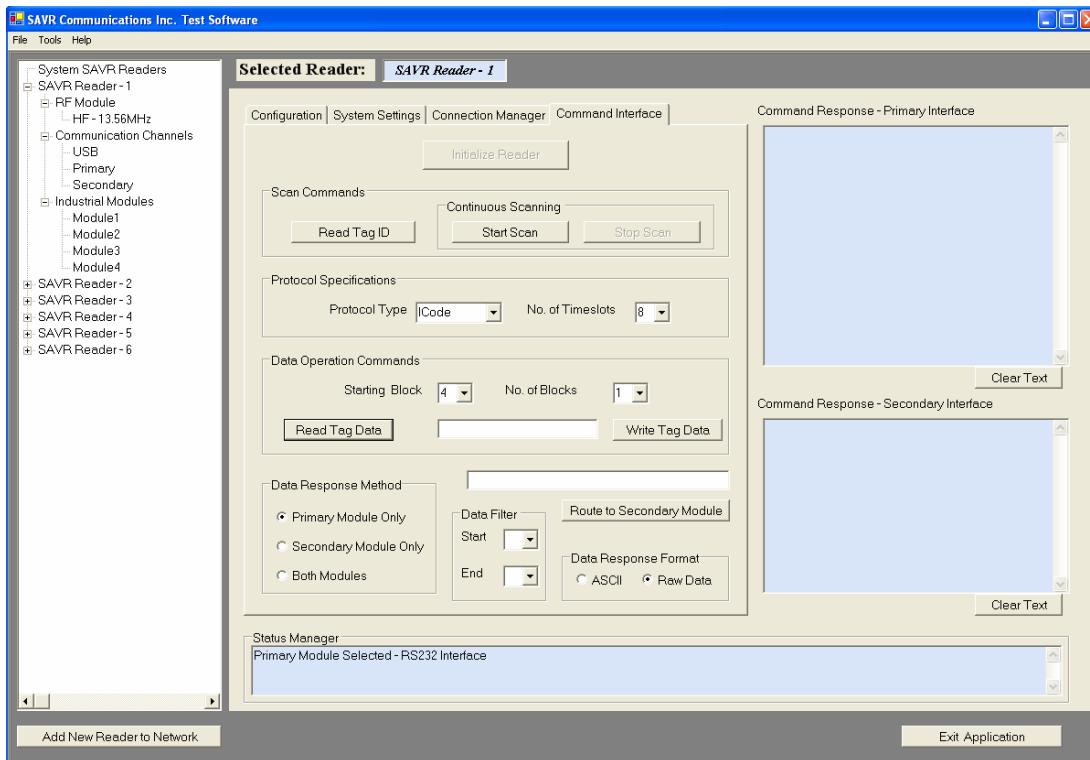


Figure 5

“Command Interface” Tab Functions and Descriptions

Command	Description	Comments	Additional Comments
Initialize Reader Command Button	Initializes the Reader	Initialize Reader command must be the first command given to the reader.	
Protocol Type	Selects the tag protocol to be implemented	In 13.56 MHz range, protocols supported are ISO 15693, Philips ICode.	
No. of Timeslots	Maximum number of tags that can be read in a single read cycle		
Read Tag ID	Reads the Tag ID of the Tag only once when the command button is pressed.		
Start Scan	Continuously reads the Tag ID of the Tags.		
Stop Scan	Stops the reader from continuously reading Tag IDs.		
Starting Block	Specifies the start block number in the tag that the Read command or Write command Applies to.	Please refer to the tag specification document as the number of blocks available for reading or writing varies with different vendors.	Be cautious of the Starting block as some blocks in the tags might be write protected or have special functionality built in.
No. of blocks	Specifies the number of blocks starting from the Starting Block that the Read or Write Command Applies to.	Please refer to the tag specification document as the number of blocks available for reading or writing varies with different vendors.	

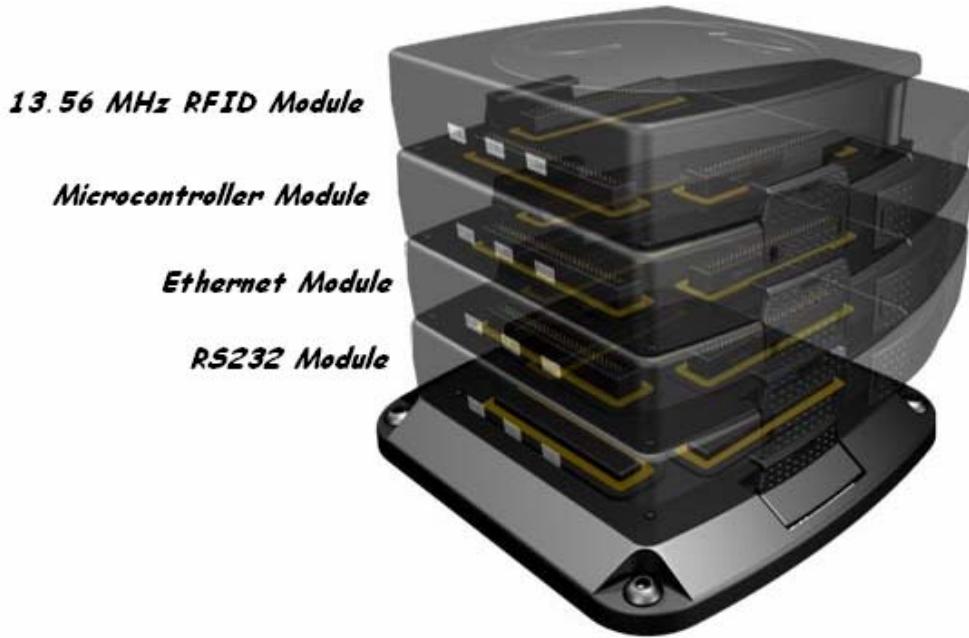
Read Tag Data	Reads the data specified by the Starting Block and No. of Blocks		
Write Tag Data	Writes the data in the text box to the left of the Write Tag Data Command Button into the tag location specified by No. of blocks and Starting Block selected earlier.		
Data Response Method	Specifies if the response to commands given by the host is returned through the primary communication channel, secondary channel, or both.	Commands to the RFID reader can only be given over the Primary Communication Channel.	The secondary communication channel can only route data.
Route to Secondary Module	Sends the text present in the text box out of the secondary channel to the host system.		
Data Filter	Instead of getting all the Tag ID data, the Tag ID can be filtered as required by specifying the Start and End Bytes.	This command only applies to Tag ID. This command is applied in speed critical applications where a part of the Tag ID is already known and can be masked.	

Quick Start Tutorial

The objective of this section is to walk through the steps involved in configuring a SAVR C2 RFID Reader. The same process can be extended to configure and add more RFID readers to the network.

Assumptions for C2 RFID Reader 1:

1. The C2 RFID reader has two communication modules (Ethernet and RS232) and a 13.56 MHz Module connected to the Microcontroller module as shown below.



2. Ethernet Module is made the primary communication module by sliding the 2 point Master-Slave switch on the module towards the “M” (Master) side.
3. RS232 Module is made the secondary communication module by sliding the 2 point Master-Slave switch on the module towards the “S” (Slave) side.

Step 1: After physically configuring the communication modules as described above, power on the system and hook the Ethernet module to your network. Optionally you may connect the RS232 module to any other device and give commands to that device over the RS232 channel using the “Route to Secondary Module” command.

Note: Do not slide the Master-Slave slide switch once the unit is powered ON.

Step 2: Open the SAVR Application Software on your PC.

Step 3: By default, upon start up “SAVR RFID Reader – 1” appears in the “System Configuration Screen”. Select it with the mouse. Upon selection, All the tabs i.e. “Configuration” Tab, “System Settings” Tab, “Connection Manager” Tab and the “Command Interface” Tab now correspond to “SAVR RFID Reader – 1”. The reader currently being used is displayed in the “Selected Reader” Text Box and is colored Red in the “System Configuration” Tree.

Step 4: Select the “Configuration” Tab. As we selected Ethernet to be the primary communication channel for the desired RFID Reader, select the “Ethernet” Radio button under Primary Communication Interface and click the “Configure Primary Module” button. “Clear Configuration” command button is clicked if you want to change the Primary communication channel of the desired RFID reader.

Step 4: Now go to the “System Settings Tab”. If you know the IP Address of the desired RFID reader, enter it in the “IP Address” Combo box.

If you do not know the IP Address of the RFID reader, then go to the “Tools” menu -> Advanced -> “Populate Mac IP Table”. The application searches the entire network for all the available SAVR C2 RFID readers in the network and populates the IP Addresses in the “IP Address” combo box. To explicitly view all the MAC and IP Addresses of all the SAVR C2 RFID readers in the system, go to “Tools” menu -> Advanced -> “View Mac IP Table”. A window pops up with a table containing all the MAC addresses and corresponding IP Addresses of all the C2 RFID readers in the network.

After you have entered or selected the IP Address of the desired RFID reader in the “IP Address” combo box, click on the “Apply Settings” command button.

Step 5: Now select the “Connection Manager” Tab. As you have selected Ethernet to be the primary communication channel, the “Ethernet Connection Manager” appears for the primary communication channel. Click on the “Connect” command button to connect to the primary communication channel (Ethernet in this case). You can disconnect from the RFID reader by clicking on the “Disconnect” command button on this screen.

Step 6: After connecting to the RFID reader, go to the Command Interface. Give the “Init Reader” Command. From now on you can give all the commands (refer to previous section “Command Interface” Tab for all available commands) to the RFID reader.

Step 7: As soon as you connect to the primary communication channel and give the “Init Reader” command, the RFID reader automatically detects the secondary communication module connected, and all the settings available for the secondary communication module are available in all the tabs. For example, before you established connection to the primary communication channel to the discussed RFID reader (Ethernet), no options are available/ active for the secondary communication channel in any of the tabs. But as soon as you make the connection to the primary communication channel and issue the “Initialize Reader” command, the RS232 appears automatically as the secondary communication module in the “Configuration Tab”. The settings available for the RS232 module such as port number, baud rate etc are available in the “System Settings” Tab under the secondary communication channel. An option to connect/disconnect to the secondary communication channel is available in the “Connection Manager Tab”. If desired, you can connect to the secondary communication module and see the response in the “Command Response-Secondary Interface” Text box.

Step 8: At this point you have added one SAVR C2 RFID reader to the network and configured it. To add another SAVR C2 RFID reader, click on the “Add New Reader to Network” command button. “SAVR Reader – 2” now appears in the “System Configuration” Tree. Select the “SAVR Reader – 2” and repeat the step above to add and configure the new reader. Using the same procedure, you can add more readers to the network.