

Your Global Automation Partner

TURCK

2RFID-S Modbus Sample Program-Visual Basic and C# Application Note

02/06/2018

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1 General Information

1.1 About these instructions

The following user manual describes the setup, functions, and use of the system. It helps you to plan, design, and implement the system for its intended purpose.

Note*: Please read this manual carefully before using the system. This will prevent the risk of personal injury or damage to property or equipment. Keep this manual safe during the service life of the system. If the system is passed on, be sure to transfer this manual to the new owner as well.

1.2 Explanation of symbols used

1.2.1 Warnings

Action-related warnings are placed next to potentially dangerous work steps and are marked by graphic symbols. Each warning is initiated by a warning sign and a signal word that expresses the gravity of the danger. The warnings have absolutely to be observed:



DANGER!

DANGER indicates an immediately dangerous situation, with high risk, the death or severe injury, if not avoided.



WARNING!

WARNING indicates a potentially dangerous situation with medium risk, the death or severe injury, if not avoided.



ATTENTION!

ATTENTION indicates a situation that may lead to property damage, if it is not avoid-ed.



NOTE

In NOTES you find tips, recommendations and important information. The notes facilitate work, provide more information on specific actions and help to avoid overtime by not following the correct procedure.

➤ **CALL TO ACTION**

This symbol identifies steps that the user has to perform.

➔ **RESULTS OF ACTION**

This symbol identifies relevant results of steps

1.3 Feedback about these instructions

We make every effort to ensure that these instructions are as informative and as clear as possible. If you have any suggestions for improving the design or if some information is missing in the document, please send your suggestions to techdoc@turck.com.

1.4 Technical support

For additional support, email inquiries to appsupport@turck.com, or call Application Support at 763-553-7300, Monday-Friday 8AM-5PM CST.

1.5 About this Guide

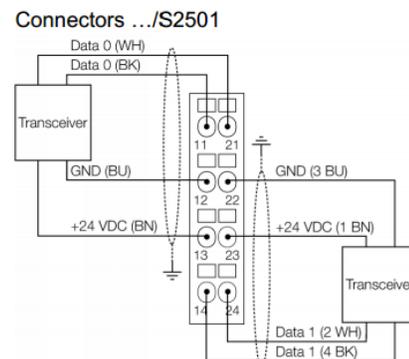
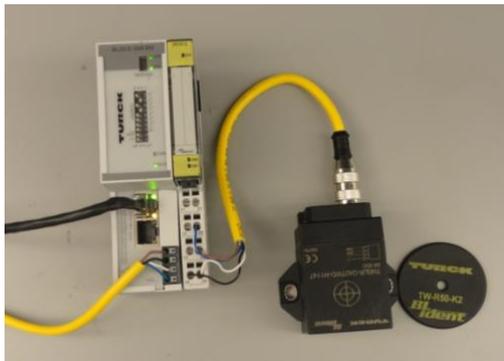
The purpose of this guide is to provide a fast and simple demonstration of how RFID works without having to install a large program such as PACTware or CoDeSys.

2 Hardware Setup

To use the “2RFID-S Modbus Sample Program” you will need one of the following 3 hardware configurations setup at your station:

- | | | |
|-------------------|----|---|
| 1. Gateway | -> | BL67-GW-EN |
| Slice Housing | -> | BL67-B-2M12-P |
| Slice | -> | BL67-2RFID-S (Must be in first slot) |
| Power Cable | -> | RKM 50-*M |
| Data Cable | -> | RSSD RJ45S 441-*M |
| Transceiver Cable | -> | RK 4.5T-*RS 4.5T/S2501 |
| Transceiver | -> | Any (Connect to channel 1 not channel 0) |
| Tag | -> | Any |
| 2. Gateway | -> | BLCEN-2M12MT-2RFID-S |
| Power Cable | -> | RKC 4.4T-3-RSC 4.4T |
| Data Cable | -> | RSSD RJ45S 441-*M |
| Transceiver Cable | -> | RK 4.5T-*RS 4.5T/S2501 |
| Transceiver | -> | Any (Connect to channel 1 not channel 0) |
| Tag | -> | Any |
| 3. Gateway | -> | BL20-GW-EN or BL20-E-GW-EN |
| Slice Housing | -> | BL20-S4T-SBBS |
| Slice | -> | BL20-2RFID-S (Must be in first slot) |
| Power Cable | -> | Field Supply |
| Data Cable | -> | RJ45S RJ45S 845-2M |
| Transceiver Cable | -> | RK 4.5T-*S2501 |
| Transceiver | -> | Any (Connect to channel 1 not channel 0) |
| Tag | -> | Any |

Note: I am using configuration 3. (Displayed below)

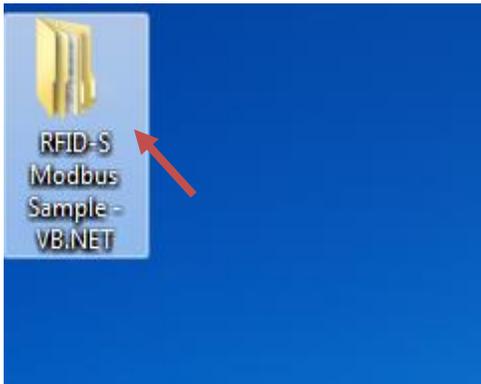


*** If you choose to use a BL20 gateway then you need to wire the transceiver up to channel 1 not channel 0. (Blue->22, Brown->23, Black->14 and White->24)**

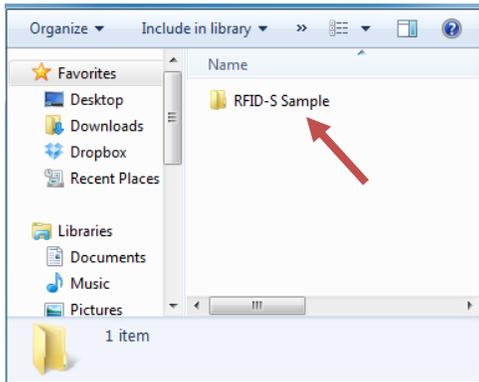
Choose Your Path

Visual Basic

Open email and drop folder on your desktop.
desktop.

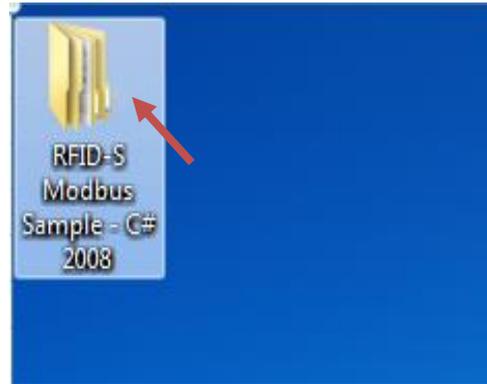


Open "RFID-S Sample"

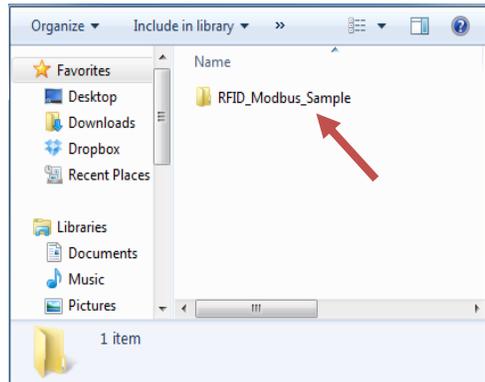


C#

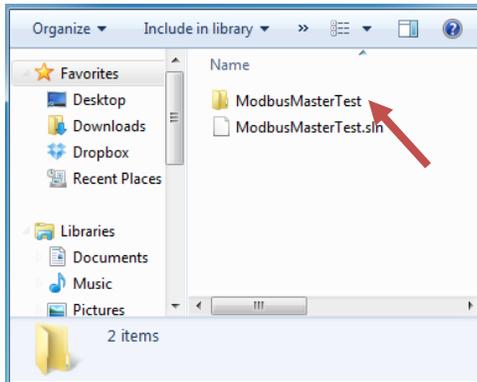
Open email and drop folder on your
desktop.



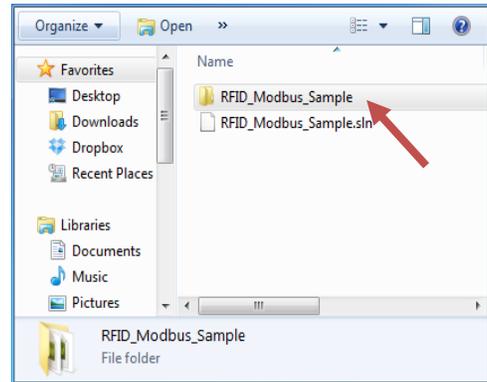
Open "RFID_Modbus_Sample"



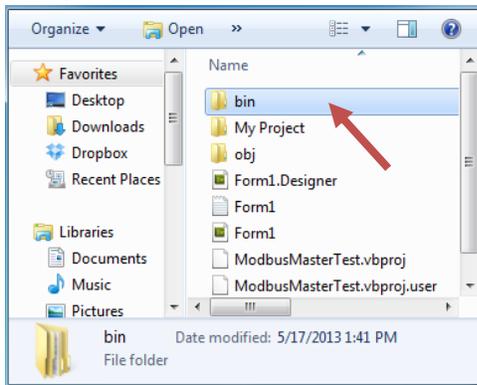
Open "ModbusMaster Test"



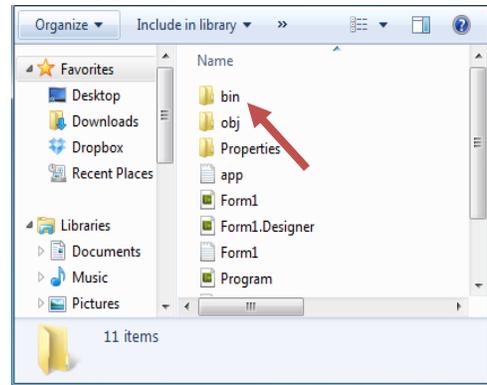
Open "RFID_Modbus_Sample"



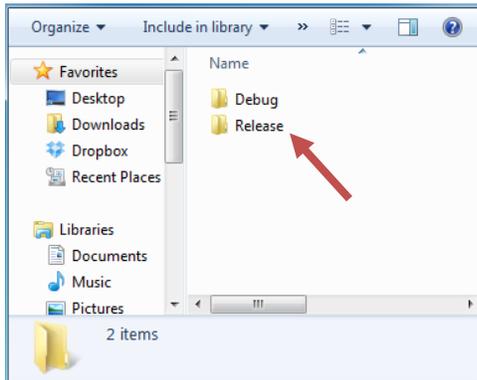
Open "bin"



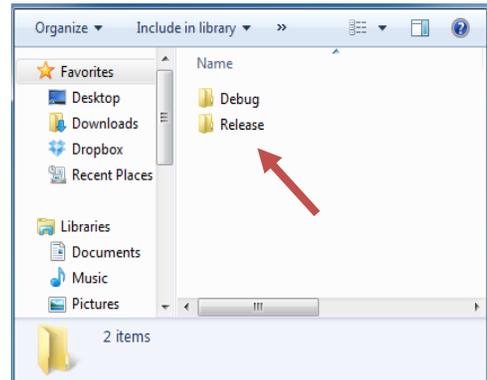
Open "bin"



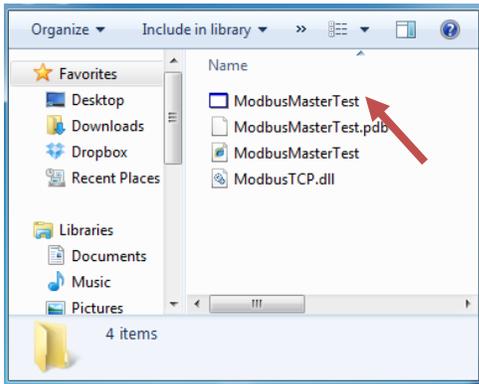
Open "Release"



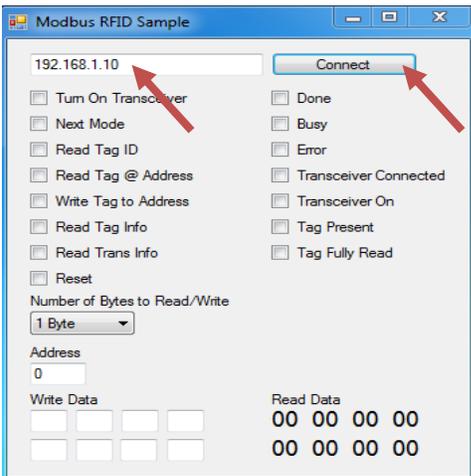
Open "Release"



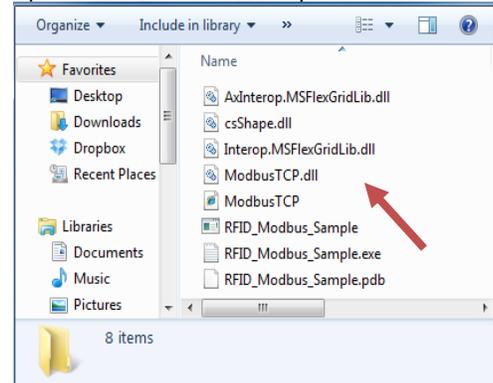
Open "ModbusMaster Test"



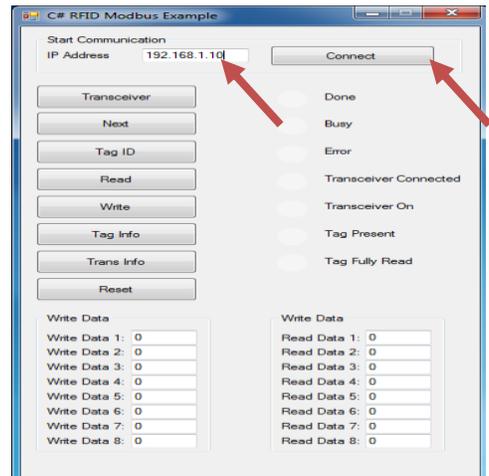
Type in the Gateway IP address and hit connect.
 (A new gateway's default address is 192.168.1.254)



Open "RFID_Modbus_Sample"

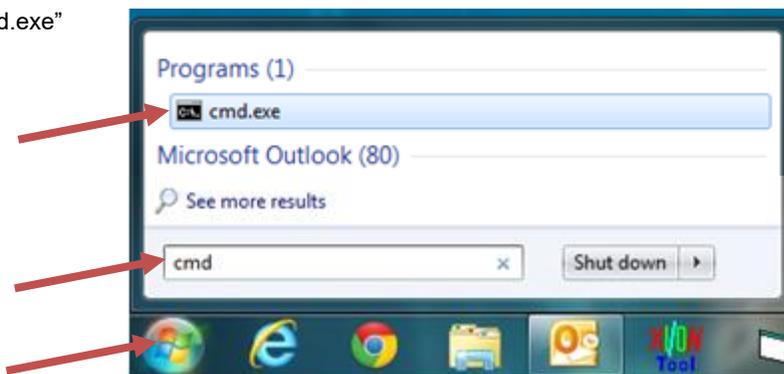


Type in the Gateway IP address and hit connect.
 (A new gateway's default address is 192.168.1.254)

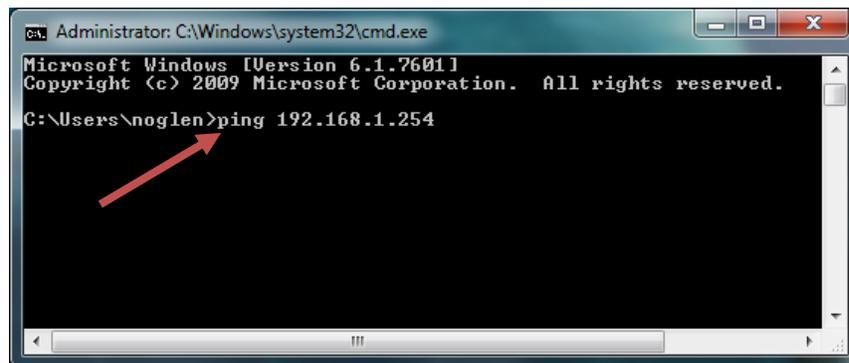


Note: If you are unable to connect to the station you should set the rotary switches to 000 and power cycle the device. Once the device comes back up, attempt to ping the device.

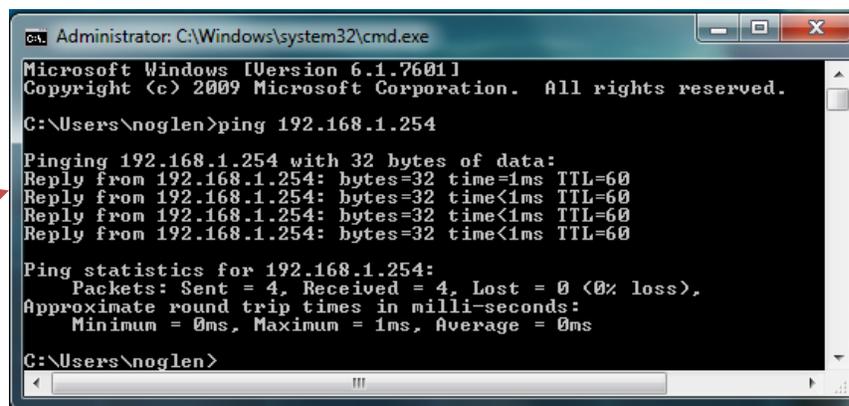
- Open Start Menu
- Type "cmd" into the command line
- Click on "cmd.exe"



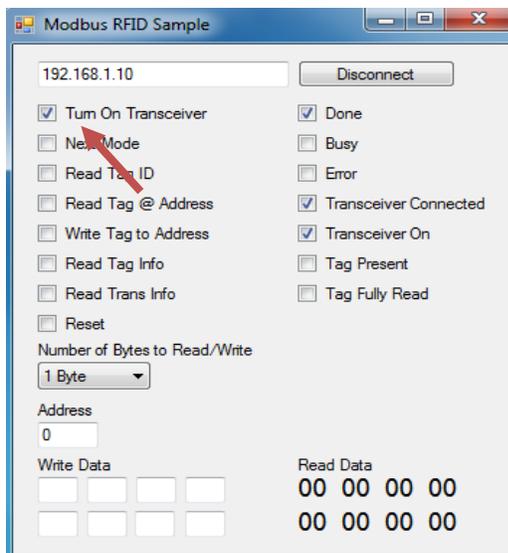
Type "ping 192.168.1.254" into the command line and press "Enter" on the key board.



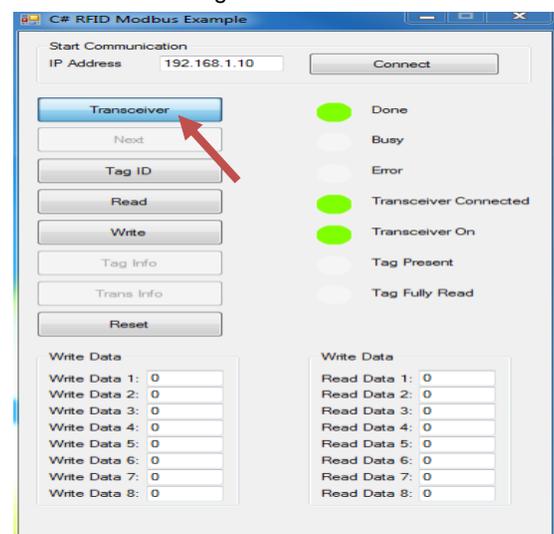
You should notice the device replying to your ping. You should now be able to connect to your device.



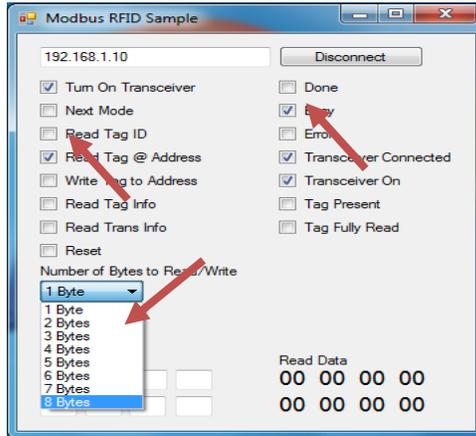
Check the "Turn On Transceiver" box. Notice "Transceiver On", "Transceiver Connected" and "Done" boxes are all checked.



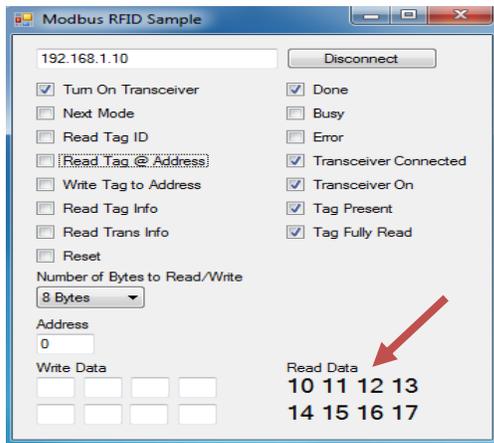
Click the "Transceiver" button. Notice "Transceiver On", "Transceiver Connected" and "Done" LED's are all green.



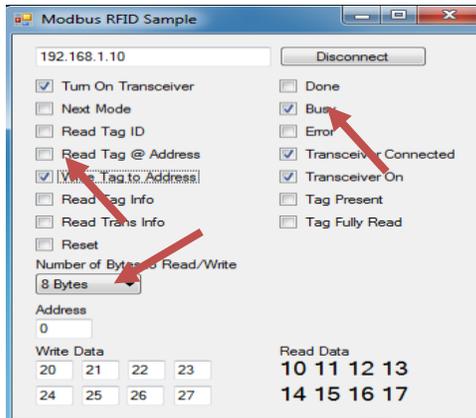
Check "Read Tag". Notice "Busy" is checked. Uncheck "Read Tag". Change drop down menu to read "8 bytes".



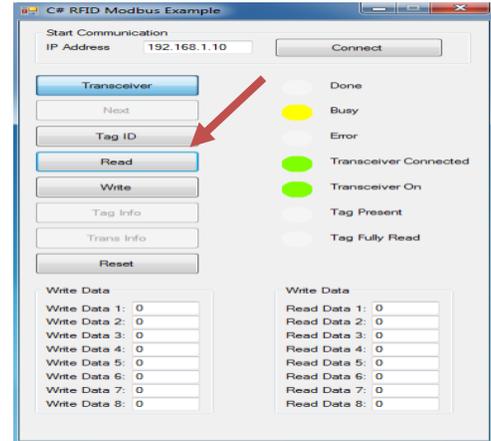
Present tag. Notice "Done", "Tag Present", and "Tag Fully Read" are all checked. Also notice the "Read Data" in the lower right



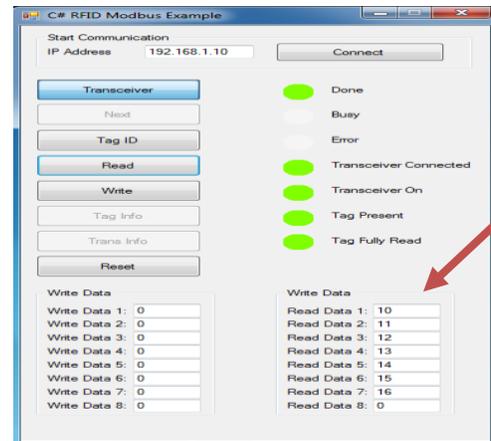
Input new data into the "Write Data" registers. Check "Write Tag". Notice "Busy" is checked. Uncheck "Write Tag". (Each register can only support a Value between 0-255)



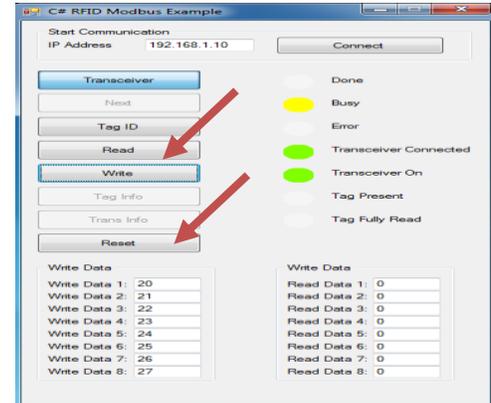
Click "Read". Notice "Busy" LED is yellow.



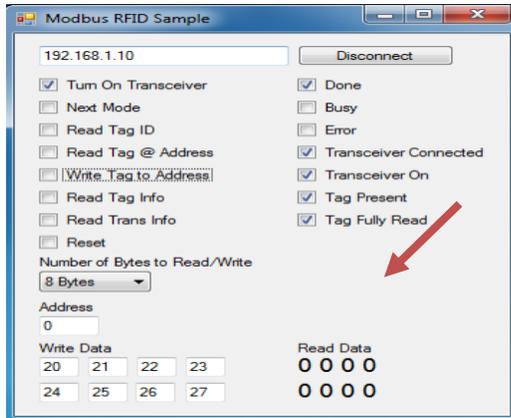
Present tag. Notice "Done", "Tag Present", "Tag Fully Read", are all Green. Also notice the "Read Data" in the lower right



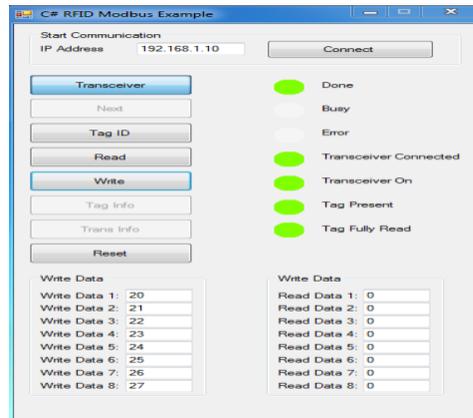
Input new data into the "Write Data" registers. Click "Write". Notice "Busy" is yellow. (Each register can only support a value between 0-255)



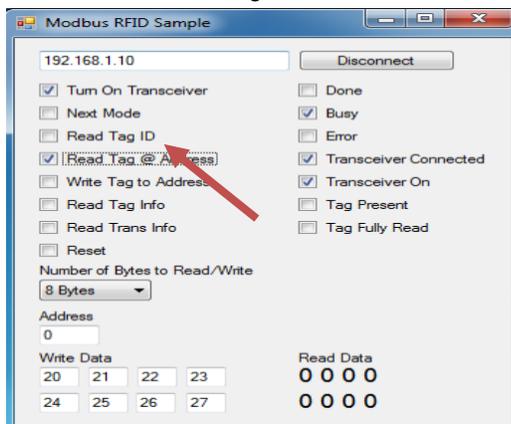
Present tag. Notice "Done", "Tag Present", and Fully Read" are all checked. Also notice the "Read Data" in the lower right corner.



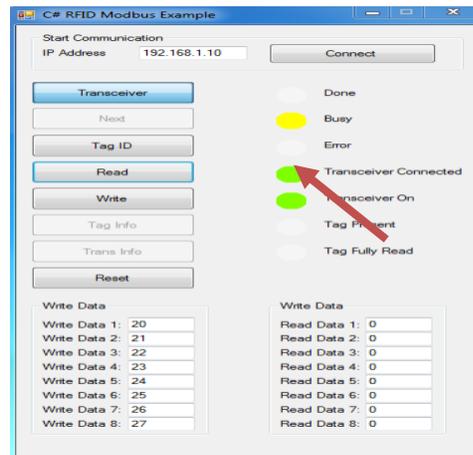
Present tag. Notice "Done", "Tag Present", and "Tag Fully Read" are all green. Also notice the "Read Data" in the lower right corner



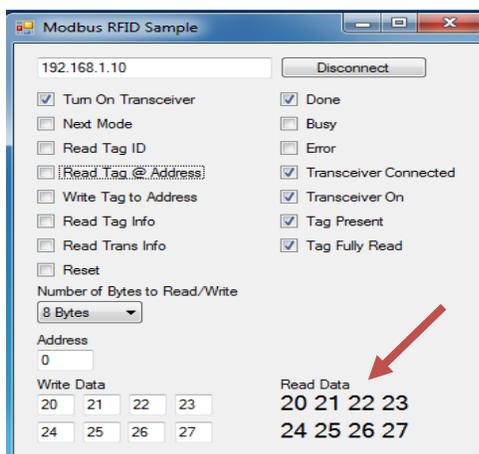
Check "Read Tag". Notice "Busy" is checked. Uncheck "Read Tag"



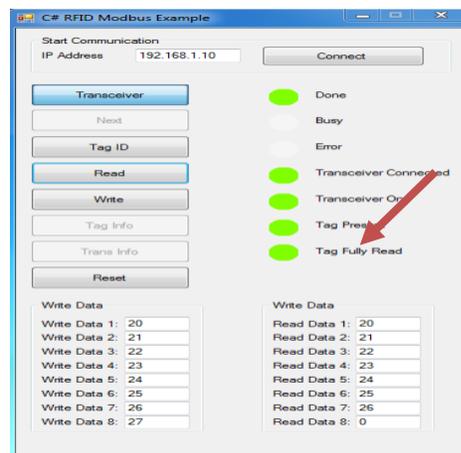
Click "Read". Notice "Busy" is Yellow



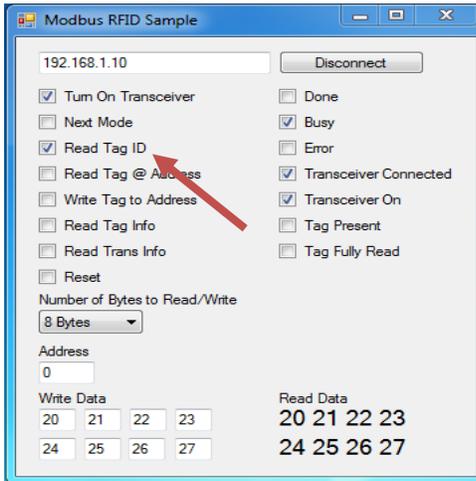
Present tag. Notice "Done", "Tag Present", and "Tag Fully Read" are all checked. Also notice the Data" in the lower right corner.



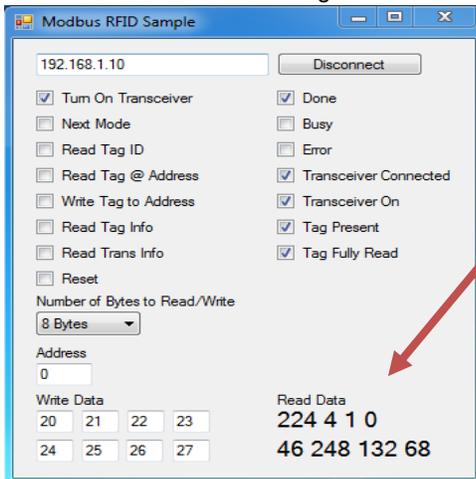
Present tag. Notice "Done", "Tag Present" and "Tag Fully Read" are all green. Also "Read Notice the "Read Data" in the lower right corner.



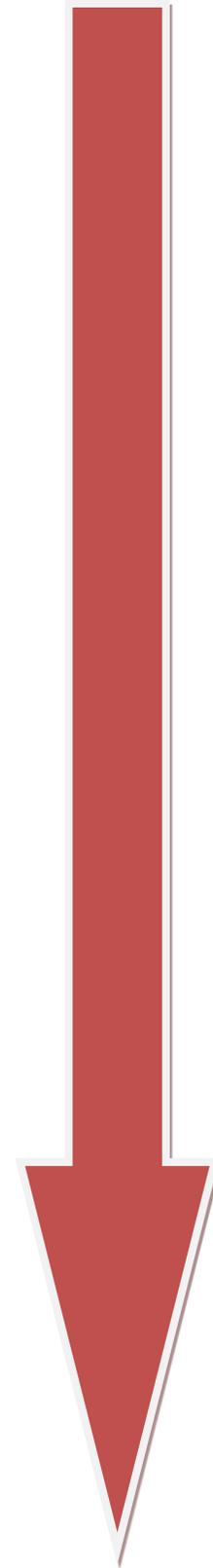
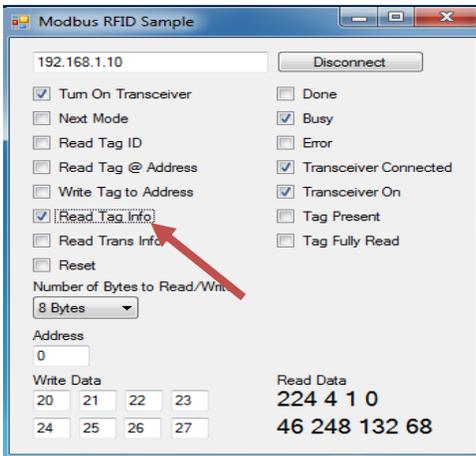
Check "Read Tag ID". Notice "Busy" is checked.
Uncheck "Read Tag ID".



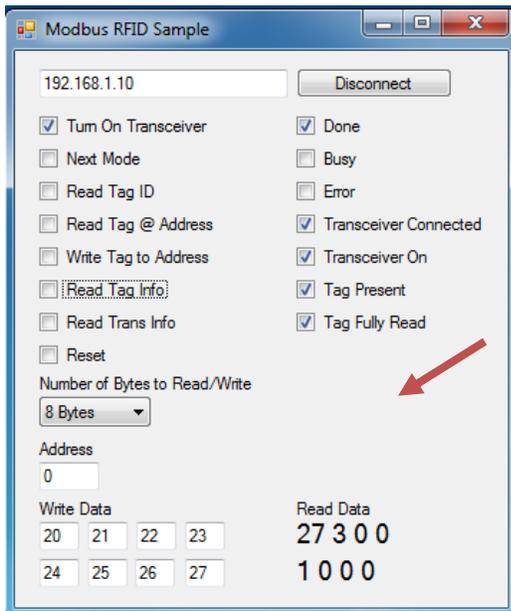
Present tag. Notice "Done", "Tag Present", and
"Tag Fully Read" are all checked. Also notice the
"Read Data" in the lower right corner.



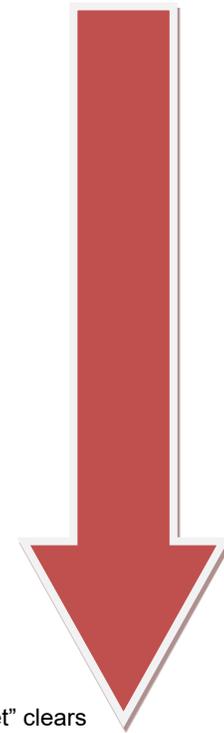
Check "Read Tag Info". Notice "Busy" is checked.
Uncheck "Read Tag Info".



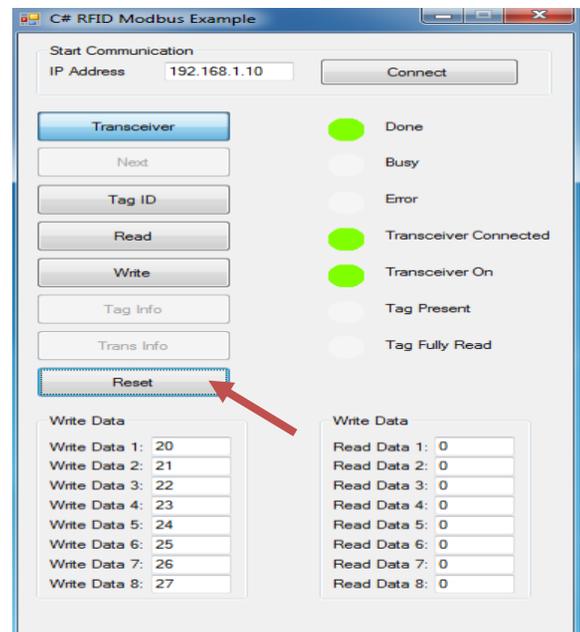
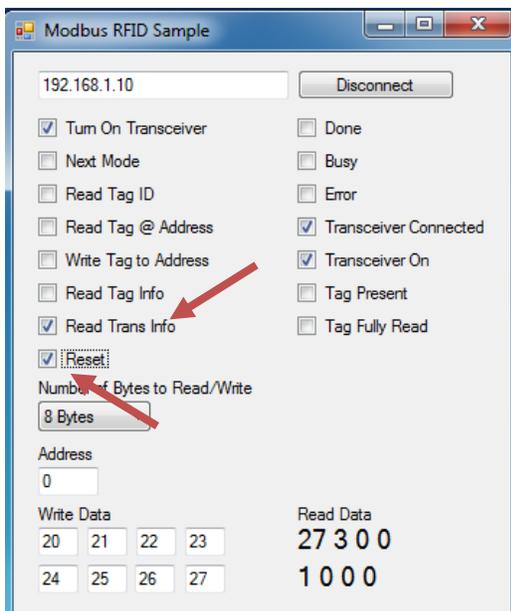
Present tag. Notice "Done", "Tag Present", and "Tag Fully Read" are all checked. Also notice the "Read Data" in the lower right corner.



Note: The "Read Trans Info" check box does not Function. The "Reset" check box resets a "Busy" command. You must check and then uncheck "Reset" to clear a "Busy" command.



Note: The "Reset" clears stored "Read Data" and resets a "Busy" command.



3 Scenarios

Scenario 1

You could demonstrate how RFID is different from “line of sight” technologies. Try placing a tag under a table, assuming that the table is not metal, point the transceiver toward the tag and demonstrate how data can be written to and read from the tag.

Scenario 2

You could demonstrate how RFID works in wet environments. Place the transceiver into a container of liquid, water is probably the easiest. Assuming the container is not metal; you can show the read/write functionality by placing a tag outside the container in the field of the transceiver. This scenario also shows the ingress protection of the transceiver and associated cord set.

Scenario 3

It doesn't need to be water and might be better suited to a typical sales call, drop a tag in your coffee cup and have the transceiver read and write data, assuming the coffee cup is not metal this should be a good demonstration of how RFID technology is less susceptible to environmental influences.