

### Modbus TCP (Client) to Modbus RTU (Slave)

#### Introduction

This document gives the details of the RLX-IFH24E setup to establish the communication between a Client Modbus TCP to a Slave Modbus RTU.

For the architecture of this implementation, the following equipments are required:

- o 2 RLX-IFH24E modules
- o 1 laptop or PC with Ethernet and serial capability and containing the following software:
  - RadioLinx ControlScape FH **V5.11.013**
  - ModScan32 (Client/Master Modbus simulator) V4.C00-05
  - ModSim32 (Server/Slave Modbus simulator) V4.A00-02





**RF** Link

RS232 Serial Bus Null Modem cable

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### Architecture

Below is the architecture of this implementation:





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#### Procedure

Note:

If your PC is not connected to a DHCP server or if it is directly connected via Ethernet to the radio module, **DO NOT FORGET TO ASIGN A FIXED IP ADDRESS** to the PC Ethernet card. For this application the IP address of the laptop is 192.168.170.15.

Here are the basic steps needed to establish communications.

#### A. Plan the network

#### A.1. Install ControlScape FH Configuration Software:

Download ControlScape FH Configuration from: <u>http://www.prosoft-technology.com/content/download/8317/112783/file</u> Then install the software on your PC.

#### A.2. Start ControlScape FH

To start ControlScape:

Click the Start button, and then choose Programs In the Programs menu, navigate to the RadioLinx folder, and then choose RadioLinx ControlScape FH.

#### A.3. Network Set Up

From the ControlScape FH **Main Menu,** select: Configure New Network





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#### The screen below is shown:

Network Propertie	es			
Network Name Radio Type:	Network 1 RLX-IFHS		- -	
FH Serial	,			
Network Type	P2P - Peer to Peer	•	Most flexible network type, each radio can either broadcast	
Network Channel	1		or send to a single other radio.	
RF Encryption	Encryption Level	128-bit AES		
	Passphrase	qntprlo9nog	jeh4s7a4tlhplr	
	K Can	cel	Help	

From the Network Properties:

- Change the Network name to Modbus Network
- Change the radio type to **RLX-IFHE** for the RLX-IFH24E modules
- Change the Network Type to **PTP** (Point To Point)
- Leave the Network Channel value to the value chosen by the software (here 1)
- Leave the Encryption Level and the Passphrase to the value chosen by the software (highest security level).

Network Properti	es		
Network Name	Modbus Network		
Radio Type:	RLX-IFHE		
FIFH Ethernet			
Network Type	PTP - Point to Point  A branchless network for bridging two networks or		
Network Channel	1 v devices.		
RF Encryption	Encryption Level 128-bit AES		
	Passphrase qntprlo9nogeh4s7a4tlhplr		
	JK Cancel Help		





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### B. Setting of the Master Radio:

The screen below is shown:

-	Radi	ioLinx Con	trolSca	ape FH - C	onfigi	iration - [Modbus N	Network. lus] 📒		×
	File	Port Setup	Radio	Properties	View	Help		- 8	×
									^
		Update Radio Master R	•— Radio			Radio 2			
									*
<								>	
For I	Help,	press F1					NUM		1

### **B.1.** Ethernet settings:

Double-click the left mouse button on the Master Radio to open the Radio Properties dialog box.

Radio Configur	ation - Master Radio	
Radio Name	Master Radio	Last Date Configured 00:00:00
		Last MAC Configured Unprogrammed
		This radio has not yet been configured.
Send Data to	Radio 2	
Equipment Settin		
- IP Settings	MAC Address	
Select Radio	0.0.0.0.0	
IP Address	0.0.0.0	
Subnet Mask	0.0.0.0	
Gateway	0.0.0.0	
Serial Setting	s	
ОК	Configure Radio	Cancel Help Advanced >>

Connect the AC power adapter cord to the port labelled 10 - 24 VDC on the bottom of the radio, and then plug the power adapter into an electrical outlet.



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Connect the crossover (Red) cable Ethernet cable to the ETHERNET port on the bottom of the radio.

The Ethernet LED on the radio is switched on.

Now click on *Select Radio*:

Radio Configu	ration - Master Radio	X
Radio Name	Master Radio	Last Date Configured 00:00:00
		Last MAC Configured Unprogrammed
		This radio has not yet been configured.
Send Data to	Radio 2	
Equipment Setti	ngs 🔛 🗲 👀	
- IP Settings	MAC Address	
Select Radio	0.0.0.0.0	
ہر IP Address	0.0.0.0	
Subnet Masł	< 0.0.0.0	
Gateway	0.0.0.0	
Serial Setting	38	_
ОК	Configure Radio	Cancel Help Advanced >>

#### The screen below is shown:

R	adio Discovery To	ol		
	MAC Address	IP Address	Radio Name	
	00.0D.8D.F4.03.94	192.168.0.254	Prosort IFHE	Scan
				Clear
				IP Settings
				OK
				Cancel



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Select the Radio and then click *IP Settings* The Radio IP Settings have to be as below: • IP Address: **192.168.170.165** 

<ul> <li>Subnet</li> <li>Gatewa</li> </ul>	255.255.255.0 y: 192.168.170.254
Radio IP Settin	ıgs 🔀
Radio Name:	Master Radio
MAC Address:	00.0D.8D.F4.03.94
Unused IP's:	IP Address
Find More	192.168.170.253 192.168.170.252
	192.168.170.249 192.168.170.248
	192.168.170.247
IP Address:	192.168.170.165
Subnet:	255.255.255.0
Gateway:	192.168.170.254
ОК	Cancel

Click on OK to validate the IP settings.

Now The IP Address is shown in the Radio Discovery Tool below:

F	ladio Discovery To	ol		
	MAC Address 00.0D.8D.F4.03.94	IP Address 192.168.170.165	Radio Name ProSoft IFHE	Scan
				Clear
				OK
				Cancel

Click on OK to validate the Radio IP Settings set above.



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#### **B.2.** Serial settings:

The Screen below is shown.

	Serial Settings	•
Radio Configu	ration - Master Radio	
Radio Name	Master Radio	Last Date Configured 00:00:00
		Last MAC Configured Unprogrammed
		This radio has not yet been configured.
Send Data to	Radio 2	
Equipment Setti	ings 🔛 🗲 関	
IF Settings	MAC Address	
Select Radio	00.0D.8D.F4.03.94	
IP Address	192.168.170.165	
Subnet Mas	k 255.255.255.0	
Gateway	192.168.170.254	
Serial Setting		
OK	Configure Radio	Cancel Help Advanced >>

The Serial encapsulation settings are:

- Encapsulation Protocol: TCP Client
  Remote IP Address 192.168.12
- Remote IP Addres
  Remote Port:
- 192.168.170.169 502

D	Data Serial Port Settings 🛛 🔀					
	- Serial Encapsulation		Г	-Serial Port Setting	s	
	Encapsulation Protocol	TCP Client		Data Port Mode	RS232	•
	Remote IP	192 . 168 . 170 . 169		Baud Rate	115200	-
	Remote Port	20011		D 1 D)	0	
	Listen IP	239.239.0.1		Data Bits	8	_
	Listen Port	20011		Parity	None	
	– Packet Boundary Settin			Stop Bits	1	•
	Char Time Out 4			Handshaking	None	•
	Max Packet 255					
	,		L			
		ок с	)an	cel		

The Serial Port Settings can be left per default because the serial port is not used. Click on *OK* to validate the configuration.



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#### **B.3.** Power settings:

Now Click on Advanced	>>:
Radio Configuration - Master Radio	X
Radio Name Master Radio	Last Date Configured 00:00:00 Last MAC Configured Unprogrammed (3) This radio has not yet been configured.
Send Data to Radio 2 💌	1
Equipment Settings IP Settings Select Radio IP Address UP Address Subnet Mask 255.255.255.0 Gateway 192.168.170.254	
Serial Settings OK Configure Radio	Cancel Help Advanced >>

Set the transmit Power at 15dBm (32mW) to limit to power transmitted by the radio.

Radio Configuration - Master Radio	<u>.</u>
Radio Name     Master Radio       Radio Address     1       Network Type     PTP - Point to Point       Send Data to     Radio 2	Last Date Configured 00:00:00 Last MAC Configured Unprogrammed This radio has not yet been configured.
Equipment Settings MAC Address Select Radio 00.0D.8D.F4.03.94 IP Address 192.168.170.165 Subnet Mask 255.255.0 Gateway 192.168.170.254	RF Settings Local Radio Settings Transmit Power Retry Limit 1
Serial Settings OK Configure Radio	Cancel Help Advanced <<

Click on OK to validate the configuration.



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### **B.4.** Program Download.

Click on Configure Radio:	
Radio Configuration - Master Radio	
Radio Name     Master Radio       Radio Address     1       Network Type     PTP - Point to Point       Send Data to     Radio 2	Last Date Configured 00:00:00 Last MAC Configured Unprogrammed This radio has not yet been configured.
Equipment Settings MAC Address Select Radio 00.0D.8D.F4.03.94 IP Address 192.168.170.165 Subnet Mask 255.255.0 Gateway 192.168.170.254	RF Settings
OK Configure Radio	Cancel Help Advanced <<

The screen below is shown:



After being downloaded successfully, this screen appears.



Click on Ok.



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Then, the radio appears in blue in ControlScape (instead of transparent).



### **B.5.** Online configuration of the Master module.

Enter the following IP address within Internet Explorer:

### 192.168.170.165

Coologie - windows internet Explorer			
	<b>3</b> 192.168.170.165		

The screen below is shown:

Connexion à 192.	168.170.165	? 🗙
		Ger
Le serveur 192.168.1 nom d'utilisateur et ur Avertissement : ce se d'utilisateur et votre r non sécurisée (authe sécurisée).	.70.165 à l'adresse w n mot de passe. erveur requiert que v mot de passe soient « ntification de base sa	vebUI requiert un otre nom envoyés de façon ans connexion
<u>N</u> om d'utilisateur :	2	~
<u>M</u> ot de passe :		
	Mémoriser mon n	not de pa <u>s</u> se
	ОК	Annuler
The User name	eis: <b>admi</b> i	n

The User name is: **admin** The password is: **admin** 



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### The web page below is shown.



The settings below must be used:

Data Mode:     TCD MODBLIC Fr (Data data		Seamless
• TCP M0	DDBUS En/Decode:	Enable
		ProSoft
RADIOLINX	Industrial Frequenc	
System Configuration	Master Radio	
Network Configuration	COM1 Configu	ration
Radio Configuration COM1 Configuration	COMI Configu	i ation
COM2 Configuration	Port Status:	○ Disable ④ Enable
Security Configuration	Channel Mode:	RS232 🗸
System Tools	Data Baud Rate:	115200 💌
Logout	Data Format:	8N1 🗸
	Flow Control:	None 💌
	Pre-Data Delay(ms):	0
	Post-Data Delay(ms):	0
	Data Mode:	<ul> <li>Seamless O Transparent</li> </ul>
	Character Timeout:	4
	Maximum Packet Size:	255
	Priority:	Normal 😽
	No-Connection Data Intake:	○ Disable ④ Enable
	TCP MODBUS En/Decode:	○ Disable ④ Enable
	IP Protocol Config	TCP Client
	TCP Client Configuration:	
	Remote Server IP Address:	192.168.170.169
	Remote Server Port:	502
	Outgoing Connection Timeout:	60
	Submit	Reset



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Then click on Submit to save the modification.

RADIOLINX	Industrial Frequency I	lopping
System Configuration Network Configuration Radio Configuration COM1 Configuration	Master Radio COM1 Configura	tion
COM2 Configuration	Port Status:	○Disable <ul> <li>Enable</li> </ul>
System Information	Channel Mode:	RS232 💌
System Tools	Data Baud Rate:	115200 💌
Logout	Data Format:	8N1 🗸
	Flow Control:	None 💌
	Pre-Data Delay(ms):	0
	Post-Data Delay(ms):	0
	Data Mode:	Seamless ○ Transparent
	Character Timeout:	4
	Maximum Packet Size:	255
	Priority:	Normal 🐱
	No-Connection Data Intake:	○Disable ④Enable
	TCP MODBUS En/Decode:	O Disable    Enable
	IP Protocol Config	TCP Client
	TCP Client Configuration:	_
	Remote Server IP Address:	192 168 170 169
	Pomoto Server Port	502
	Outgoing Connection Timeset	502
	Ourgoing Connection Timeout:	
	Submt	Reset

Close the web browser.

The settings of the Master radio are finished.

Disconnect the Ethernet cable from the ETHERNET port on the bottom of the radio.



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### C. <u>Setting of the remote radio:</u>

The screen below is shown:

-	Radi	ioLinx Con	trolSca	upe FH - C	onfigi	ıration - [Modbus Netwo	rk. lus] 📒	
Å	Eile	Port <u>S</u> etup	<u>R</u> adio	Properties	⊻iew	Help		- 8 ×
								~
		⇒ Master R	adio			Radio 2		
								×
<u>&lt;</u>								>
For	Help,	press F1					NUM	

#### C.1. Ethernet settings:

Double-click the left mouse button on the Radio 2 to open the Radio Properties dialog box.

Radio Configuration - Radio 2	
Radio Name     Radio 2       Radio Address     2       Network Type     PTP - Point to Point 💌       Send Data to     Master Radio	Last Date Configured 00:00:00 Last MAC Configured Unprogrammed This radio has not yet been configured.
Equipment Settings     MAC Address       IP Settings     0.0.0.0.0       IP Address     0.0.0.0       Subnet Mask     0.0.0       Gateway     0.0.0.0	RF Settings       Image: Constraint of the settings         Local Radio Settings         Transmit Power       30dBm (1000mW)         Retry Limit       1         Radio Network Settings         Use this radio as a Repeater         Allow radio to Roam
Serial Settings           OK         Configure Radio	Cancel Help Advanced <<

Connect the AC power adapter cord to the port labelled 10 - 24 VDC on the bottom of the radio, and then plug the power adapter into an electrical outlet.





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Connect the crossover (Red) cable Ethernet cable to the ETHERNET port on the bottom of the radio.

The Ethernet LED on the radio is switched on.

#### Now click on Select Radio:

Radio Configuration - Radio 2				
Radio Name     Radio 2       Radio Address     2       Network Type     PTP - Point to Point       Send Data to     Master Radio	Last Date Configured 00:00:00 Last MAC Configured Unprogrammed This radio has not yet been configured.			
Equipment Settings IP Settings Select Radio IP Address Subnet Mask Gateway Serial Settings	RF Settings       Jocal Radio Settings         Transmit Power       30dBm (1000mW/) ▼         Retry Limit       1         Radio Network Settings         Use this radio as a Repeater         Allow radio to Roam			
OK Configure Radio	Cancel Help Advanced <<			

#### The screen below is shown:

R	Radio Discovery Tool			
	MAC Address 00.0D.8D.F4.03.A6	IP Address 0.0.0.0	Radio Name Radio 2	Scan
				Clear
				IP Settings
				Cancel

Select the Radio and then click **IP Settings** The Radio IP Settings are as below:

٠	IP Address:	192.168.170.169
٠	Subnet:	255.255.255.0

• Gateway: **192.168.170.254** 



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Radio IP Settin	ngs 🛛 🔀
Radio Name:	Radio 2
MAC Address:	00.0D.8D.F4.03.A6
Unused IP's:	IP Address
Find More	192.168.170.253 192.168.170.252
	192.168.170.249
	192.168.170.248
IP Address:	192.168.170.169
Subnet:	255.255.255.0
Gateway:	192.168.170.254
ОК	Cancel

Click on OK to validate the IP Address (192.168.170.169). Now The IP Address is shown in the Radio Discovery Tool.

Radio Discovery To	ol		E
MAC Address	IP Address	Radio Name	
00.0D.8D.F4.03.A6	192.168.170.169	Radio 2	Scan
			Clear
			IP Settings
			OK
			Cancel

Click on OK to validate the Radio IP Setting set above.

### C.2. Serial settings:

Click on *Serial Settings* on the Screen below:

Radio Configuration - Radio 2	
Radio Name     Radio 2       Radio Address     2       Network Type     PTP - Point to Point v       Send Data to     Master Radio v	Last Date Configured 00:00:00 Last MAC Configured Unprogrammed  This radio has not yet been configured.
Equipment Settings IP Settings MAC Address Select Radio 10 00 00 80 F4.03A6 10 Address 192.168.170.169 Subnet Mask 255.255.255.0 Gateway 192.168.170.254 Serial Settings	RF Settings       Image: Control of the setting of the s
OK Configure Radio	Cancel Help Advanced <<



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**TCP Server** 

X

-

•

•

502

None

1

None

1

Handshaking None

The Serial encapsulation settings are:

- Encapsulation Protocol:
- Listen Port: •
- Serial port settings: •
  - Data port Mode : **RS232** 0 Baud rate: 115200 Data Bits: 8 0
    - Parity: 0
    - 0
    - Stop Bits:

0	Handshaking		No	ne
ita Serial Port Setti	ngs			
Serial Encapsulation		-Serial Port Setting	js —	
Encapsulation Protocol	TCP Server	Data Port Mode	RS232	-
Remote IP	239 . 239 . 0 . 1	Baud Rate	115200	•
Remote Port	20011	Data Bits	8	-
Listen IP	239 . 239 . 0 . 1		1	_

Parity

Stop Bits

Max Packet 255 Cancel ΟK Click on OK to validate the configuration.

#### C.3. **Power settings:**

502

Listen Port

Packet Boundary Settings

Char Time Out 4

Now Click on Advanced>> and set the transmit Power at 15dBm (32mW) to limit to power transmitted by the radio.

Radio Configuration - Master Radio	
Radio Name Radio 2	Last Date Configured 00:00:00
Radio Address 2	Last MAC Configured Unprogrammed
Network Type PTP - Point to Point 💌	This radio has not yet been configured.
Send Data to Master Radio 🔽	
Equipment Settings IP Settings Select Radio 00.0D.8D.F4.03.A6 IP Address 192.168.170.169	RF Settings     Image: Construction of the settings       Local Radio Settings       Transmit Power       Retry Limit
Subnet Mask 255.255.255.0	
Gateway 192.168.170.254	
Serial Settings	
UK Contigure Radio	Lancel Help Advanced <<



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### C.4. Program download

Click on Configure Radio:	
Radio Configuration - Master Radio	· · · · · · · · · · · · · · · · · · ·
Radio Name     Radio 2       Radio Address     2       Network Type     PTP - Point to Point       Send Data to     Master Radio	.ast Date Configured 00:00:00 .ast MAC Configured Unprogrammed This radio has not yet been configured.
Equipment SettingsMAC AddressIP SettingsMAC AddressSelect Radio00.0D.8D.F4.03.A6IP Address192.168.170.169Subnet Mask255.255.255.0Gateway192.168.170.254	BF Settings       Image: Constraint of the setting set
Serial Settings	Cancel Help Advanced <<

The screen below is shown:



After being downloaded successfully, this screen appears.



Click on Ok.



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Then, the radio appears in blue in ControlScape (instead of transparent).



### C.5. Online configuration of the remote module.

Enter the following IP address within Internet Explorer:



The screen below is shown:

Connexion à 192.	168.170.165 🛛 🛛 🔀					
	GP					
Le serveur 192.168.1 nom d'utilisateur et ur Avertissement : ce se d'utilisateur et votre n non sécurisée (auther sécurisée).	70,165 à l'adresse webUI requiert un 1 mot de passe. rveur requiert que votre nom not de passe soient envoyés de façon tification de base sans connexion					
<u>N</u> om d'utilisateur :	2					
<u>M</u> ot de passe :						
	Mémoriser mon mot de pa <u>s</u> se					
	OK Annuler					

The User name is: The password is: admin admin



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#### Clik on COM1 Configuration on the web page below:



The COM 1 Configuration screen below is shown.The settings below must be changed:Data Mode:SeamlessTCP MODBUS En/Decode:Enable

RADIOLINX	Industrial Frequency H	lopping ProSoft		
System Configuration Network Configuration Radio Configuration COM1 Configuration	Radio 2 COM1 Configura	tion		
COM2 Configuration	Port Status:	○ Disable ④ Enable		
Security Configuration	Channel Mode:	RS232 🗸		
System Tools	Data Baud Rate:	115200 🛩		
Logout	Data Format:	8N1 🖌		
	Flow Control:	None 🗸		
	Pre-Data Delay(ms):	0		
	Post-Data Delay(ms):	0		
	Data Mode:	⊙ Seamless ○ Transparent		
	Character Timeout:	4		
	Maximum Packet Size:	255		
	Priority:	Normal 💌		
	No-Connection Data Intake:	○ Disable ④ Enable		
	TCP MODBUS En/Decode:	○Disable ⊙Enable		
	IP Protocol Config	TCP Server		
		-		
	TCP Server Configuration:			
	Local Listening Port:	502		
	Incoming Connection Timeout:	300		
	Submit	Reset		



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Then click on Submit to save the modification.

RADIOLINX	Industrial Frequency I	lopping
System Configuration Network Configuration Radio Configuration COM1 Configuration	Radio 2 COM1 Configura	tion
COM2 Configuration	Port Status:	○ Disable ④ Enable
System Information	Channel Mode:	RS232 💌
System Tools	Data Baud Rate:	115200 💌
Logout	Data Format:	8N1 🛩
	Flow Control:	None 🗸
	Pre-Data Delay(ms):	0
	Post-Data Delay(ms):	0
	Data Mode:	Seamless ○ Transparent
	Character Timeout:	4
	Maximum Packet Size:	255
	Priority:	Normal 🐱
	No-Connection Data Intake:	○ Disable ④ Enable
	TCP MODBUS En/Decode:	○ Disable ④ Enable
	IP Protocol Config	TCP Server
	TCP Server Configuration:	-
	Local Listening Port:	502
	Incoming Connection Timeout:	300
	Submit	Reset

Disconnect the Ethernet cable from the ETHERNET port on the bottom of the radio (Radio2) and connect it back to the Master Radio.

Connect the RS232 serial port of the remote radio to the Laptop by using the serial cable shipped with the RLX-IFH24E radios.

NOW the Configuration of the RLX-IFH24E-E modules is finished.



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### D. Save File

Click on *File* and *save* to save the application.

ä,	Radi	ioLinx Con	trolSca	ipe FH - C	onfig	uration - [Modbus Netwo
*	File	Port Setup	Radio	Properties	View	Help
	C	lose				
	S	ave	Ctrl+S			≽¶≼
	Pi Pi	rint Setup	Ctrl+P			
	E	<it< th=""><th></th><th></th><th></th><th>Radio 2</th></it<>				Radio 2

#### Click on *save* on the screen below:

Enregistrer sous		? 🗙
Enregistrer <u>d</u> ans : [	🔁 RadioLinx 💽 🔶 🖆 🎫	
<ul> <li>101-02-000590.lus</li> <li>101-02-000718.lus</li> <li>101-02-000989.lus</li> <li>AURECOM.lus</li> <li>COTE IVOIR.lus</li> <li>essais.lus</li> </ul>	Feby.lus     Modbus TCP to Modbus.lus     Modbus TCP.lus     Modbus TCP.lus     ModbusOverRLX.lus     Network 16.lus     Network 11.lus     Network 1.lus	4
<		>
Nom <u>d</u> u fichier :	Modbus Network.lus	<u>E</u> nregistrer
<u>Т</u> уре :	RadioLinx Network (*.lus)	Annuler

It is possible to set a password to restrict access to the configuration file.

As we will not use the password restriction we leave the Password box blank and Click on OK:

Configuration Access Password	×				
Please enter a password of up to 7 characters to restrict access to the configuration file. Leave blank to allow access without a password.					
Password					
ОК					



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### E. <u>RF link testing.</u>

We will monitor the RF link to ensure that the two modules are well configured. Connect the antennas on the ANTENNA port of the radios.



Then click on *Diagnostic; Network and Modbus TCP to Modbus* 

👛 F	RadioLinx (	ControlSca	pe FH					
File	Port Setup	Configure	Diagnostic	Utilities	Help			
			Network		Þ	101-02-000590		
			Serial Ra	dio (	Itrl+R	101-02-000718		
			Ethernet	Radio (	Etrl+E	101-02-000989		
						Modbus Network		
						Modbus TCP to Mo	dbus	
						Modbus TCP	14	

#### The screen below is shown:



Now we know that the two modules are connected by wireless.



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### F. Slave Configuration (Modbus RTU device).

To emulate the slave device, ModSim32 is used.

To use this software thank you to click on the link below: <a href="http://www.win-tech.com/">http://www.win-tech.com/</a>

Launch the ModSim32 software.

Click on *Connection; Connect* and select *Port 1* (if the serial port of your computer is Port 1)



The screen below is shown.

Thank you to setup the communication port as below:

Baud rate:11520Data Bits:8Stop Bits:1Parity:None	0
Setup Comm Port 1	×
Protocol © RTU C ASCII □ Daniel/ENRON protocol	
Baud Rate: 115200 V Data Bits: 8 V Stop Bits: 1 V Parity: NDNE V	
Hardware Flow Control Wait for DTR from Master Delay 0 ms after RTS before transmitting first character Wait for CTS from Master Delay 0 ms after last character before releasing RTS	
OK Cancel	

Click on OK to validate the configuration.



How to Setup RLX-IFH24E - Modbus TCP to Modbus RTU

Click on *File and New* to generate a new slave device.

#### The screen below is shown:

ModSim1		
	Device Id: 1	
Address: 0100	MUDBUS Point Type	
	03: HOLDING REGISTER 🔻	
Length: 100		
40100, (00000)	401.41, (000.00) 401.00, (000.00)	
40101: <00000>	40141: <00000> 40182: <00000>	
40101. (000002	40142.5000002 40103.5000002	
40102. \000007	4014J. \000007 40104. \000007 4014A. \00000\ 40185. \00000\	
40103. (000007	A0145: 200000 A0186: 200000	
40105: <000000>		
40106: <000002	40147: <00000> 40107: <00000>	
40107: <00000>	40148: <00000> 40189: <00000>	
40108: <00000>	40149: <00000> 40190: <00000>	
40109: <00000>	40150: <00000> 40191: <00000>	
40110: <00000>	40151: <00000> 40192: <00000>	
40111: <00000>	40152: <00000> 40193: <00000>	
40112: <00000>	40153: <00000> 40194: <00000>	
40113: <00000>	40154: <00000> 40195: <00000>	
40114: <00000>	40155: <00000> 40196: <00000>	
40115: <00000>	40156: <00000> 40197: <00000>	
40116: <00000>	40157: <00000> 40198: <00000>	
40117: <00000>	40158: <00000> 40199: <00000>	
40118: <00000>	40159: <00000>	
40119: <00000>	40160: <00000>	
40120: <00000>	40161: <00000>	
40121: <00000>	40162: <00000>	
40122: <00000>	40164: <00000>	
40123. (000002	40104.5000002	
40124. (00000)	40103. \000007	
40125. (00000)	40100. (000007	
40127: <000003>	40168: <00000>	
40128: <000003	40169: <00000>	
40129: <000000>	40170: <00000>	
40130: <00000>	40171: <00000>	
40131: <00000>	40172: <00000>	
40132: <00000>	40173: <00000>	
40133: <00000>	40174: <00000>	
40134: <00000>	40175: <00000>	
40135: <00000>	40176: <00000>	
40136: <00000>	40177: <00000>	
40137: <00000>	40178: <00000>	
40138: <00000>	40179: <00000>	
40139: <00000>	40180: <00000>	
40140: <00000>	40181: <00000>	
		5
		× 1



How to Setup RLX-IFH24E - Modbus TCP to Modbus RTU

### G. <u>Client Configuration (Modbus TCP device)</u>.

To emulate the Client device, ModScan32 is used.

To use this software thank you to click on the link below: <a href="http://www.win-tech.com/">http://www.win-tech.com/</a>

Launch the ModScan32 software and enter the flowing parameters:

Address:	0100
Length:	100
Modbus point Type	03: HOLDING REGISTER

💶 ModSca1					
Address: Length:	0100	Device Id: 1 MODBUS Point Type 03: HOLDING REGISTER	•	Number of Polls: 0 Valid Slave Responses: 0 <mark>Reset Ctrs</mark>	

#### Click Connection and Connect.

The widow below is shown. Thank you to use the following settings

nnection De	tails		
Connect U	sing:		
	Remote T	CP/IP Server	<b>_</b>
		IP Address:	192.168.170.169
		Service Port:	502
Configuration—			
Baud Rate:	19200	-	Hardware Flow Control
Word Length:	8		Wait for DSR from slave
word congen.	Juana 1		transmitting first character
Parity:	NUNE	<b>_</b>	Wait for CTS from slave
Stop Bits:	1	-	before releasing RTS



How to Setup RLX-IFH24E - Modbus TCP to Modbus RTU

### H.Communication test

Connection De	tails	×
Connect U	sing:	
	Remote TCP/IP Server	•
	IP Address:	192.168.170.169
	Service Port:	502
Configuration -		
Baud Rate:	19200 💌	Hardware How Control
Word Length:	8 👻	Delay ms after RTS before
Parity:	NONE	Wait for CTS from slave
Stop Bits:	1 💌	Delay 0 ms after last character before releasing RTS
	F	Protocol Selections
	(OK	Cancel

Click on ok to start the exchanges between the Client TCP and the Modbus slave.

we can	see	unat une	Temote de	vice	senu vai	iu i	esponses				
= ModScan	32 - [Mo	dSca1]									
😑 Eile Conn	ection <u>S</u>	etup <u>V</u> iew <u>W</u> in	dow <u>H</u> elp								- 8 ×
0 🗳 日	i ∎ €	6. 00 S	<b>₿ ? №</b>								
01 40 To	0x 3.2										
Address:	0100	De			Number of Po	lls: 4					
	100		DBUS Point Type		Valid Slave R	espon	ses: 4				
Length:	100	U3: HU	LDING REGISTER	-		Re	set Ctrs				
40100 - 7	0.5	40110. /	0. 40126 /	0.5	401E4 · /	0.5	40172 . /	0.5	40190.	/ 0\	
40100: <	0>	40119: <	0> 40137: <	0>	40155: <	0>	40173: <	0>	40191:	< 0>	
40102: < 40103: <	0>	40120: <	0> 40138: < 0> 40139: <	0>	40156: < 40157: <	0>	40174: < 40175: <	0>	40192:	< 0> < 0>	
40104: <	0>	40122: <	0> 40140: <	0>	40158: <	0>	40176: <	0>	40194:	< 0>	
40105: <	0>	40123: <	U> 40141: < D> 40142: <	0>	40159: < 40160: <	0>	40177: <	0>	40195:	< U>	
40107: <	0>	40125: <	0> 40143: <	0>	40161: <	0>	40179: <	0>	40197:	< 0>	
40108: <	0>	40126: <	0> 40144: <	0>	40162: <	0>	40180: <	0>	40198:	< 0>	
40109: <	0>	40127: <	0> 40145: <	0>	40163: <	0>	40181: <	0>	40199:	< U>	
40111: <	Ű>	40129: <	0> 40147: <	Ű>	40165: <	Ű>	40183: <	0>			
40112: <	0 >	40130: <	0> 40148: <	0 >	40166: <	0 >	40184: <	0 >			
40113: <	0>	40131: <	0> 40149: <	0>	40167: <	0>	40185: <	0>			
40114: <	0>	40132: <	0> 40150: <	0>	40168: <	0>	40185: <	0>			
40116: <	0>	40134: <	0> 40152: <	0>	40170: <	0>	40188: <	0>			
40117: <	0>	40135: <	0> 40153: <	0>	40171: <	0>	40189: <	0>			
<											
For Help, press	F1							Polls:	4	Resps: 4	

The screen below is shown. We can see that the remote device send valid responses



How to Setup RLX-IFH24E - Modbus TCP to Modbus RTU

Double click on the register 40100 and change the value from **0** to **15**.

Wri	te Register	×
	Node: 1	
	Address: 100	
	Value: 15	
	Update Cancel	

Click on Update to send this value to the Slave device. Within ModSim32 software you can see that the register 40100 has been correctly updating:

🏳 ModSim1		
Address: 0100 Length: 100	Device Id: 1 MODBUS Point Type 03: HOLDING REGISTER 40148: <000000   40196: <000000	
40101: <00000> 40102: <00000> 40103: <00000> 40104: <00000> 40105: <00000> 40105: <00000> 40107: <00000> 40108: <00000> 40108: <00000> 40110: <00000>	40149; <00000> 40197; <00000> 40197; <00000> 40198; <00000> 40198; <00000> 40152; <00000> 40199; <00000> 40153; <00000> 40155; <00000> 40156; <00000> 40156; <00000> 40156; <00000> 40158; <00000>	
40111: (00000) 40113: (0000) 40113: (0000) 40114: (0000) 40115: (0000) 40116: (0000) 40117: (0000) 40118: (0000) 40119: (0000) 40120: (0000) 40122: (0000)	40153: <00000> 40163: <00000> 40161: <00000> 40163: <00000> 40163: <00000> 40164: <00000> 40165: <00000> 40166: <00000> 40166: <00000> 40168: <00000> 40169: <00000>	
40123: <00000> 40124: <00000> 40125: <00000> 40125: <00000> 40127: <00000> 40128: <00000> 40129: <00000> 40130: <00000> 40131: <00000> 40133: <00000> 40133: <00000> 40135: <00000> 40135: <00000>	40171: <00000> 40172: <00000> 40173: <00000> 40174: <00000> 40175: <00000> 40176: <00000> 40177: <00000> 40177: <00000> 40178: <00000> 40180: <00000> 40180: <00000> 40180: <00000> 40181: <00000> 40183: <00000>	

The system is up and running and well configured.

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