

Configuring RAD-900-IFS with GW MODBUS TCP/RTU for Modbus TCP Communication

Published: 2018-10-22

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Introduction

Objectives:

This document covers configuring the RAD-900-IFS wireless module and the GW MODBUS TCP/RTU 1E/DB9 for MODBUS TCP to MODBUS TCP communication between a master station and two remote slave locations.





Requirements:

The following hardware and software was used in the development of this procedure

- Wireless Module 2901540 RAD-900-IFS (Quantity 3)
- Antenna 2885676 RAD-ISM-900-ANT-OMNI-RPSMA (Quantity 3)
- Communication Gateway 2702764 GW MODBUS TCP/RTU 1E/1DB9 (Quantity 3)
- Modbus TCP Bus Coupler 2703981 IL ETH BK DI8 DO4 2TX-PAC (Quantity 2)
- Software
 - PSI CONF 2.60 or higher available at www.phoenixcontact.com/catalog/2901540
 - IPAssign_v1.1.3 available at www.phoenixcontact.com/catalog/2703981
 - o Wintech Modscan 32 available at https://www.win-tech.com/html/demos.htm
 - Note: This is a trial version



Procedure

Configuring the RAD-900-IFS wireless modules for serial communication

- 1. Set the yellow thumbwheels of the three RAD-900-IFS modules to 01, 02 and 03 and reference the data sheet (<u>www.phoenixcontact.com/catalog/2901540</u>) for power connections. Apply power to all three wireless modules.
- 2. Open PSI-CONF 2.60 and select the 900 MHz selection under the Wireless tab. Click 'Next'

Device Selec Velcome! lease select the device to	be configured:	_						
	Modern Wireless	RS-485	Calendary Construction			Z,4GHZ		
2313559 FL COMSERVER WL	2313805, 2708517. 2313795PSI-WL-RS232	2702184 RAD-RS485-IFS	2702863 RAD-2400-IFS-JP	2702878 RAD-900-IFS-AU	2901540, 2702877 RAD-900-IFS, B	2901541 RAD-2400-IFS	2904909 RAD-868-IFS	
								Next

3. Click on 'New'

Network Project	
Create new network project	Current network project file
Open saved betwork project from file	Edit in Wizard
Open	Edit in Individual Settings
Read physical network	Compare physical network with project file
Read	Compare



4. Select 'Point To Point / Star' and click 'Next'



5. Set the number of slaves to '2' and click "OK'.



6. On Wizard, Step 2, confirm information is correct and click 'Next'.



7. On 'Wizard, Step 3', select 'Serial data' Mode in the 'Application of wireless network section'. For a simple bench test the rest of the settings can be left unchanged, but depending on the environment that the system will be installed in the "Network Settings' and 'Network speed/distance relation' settings may need to be adjusted. Click 'Next'

Sep 1 Project configuration Sep 3 Red Network configuration Sep 4 Sep 4 Set 8 Sep 5 Set 8 Sep 5 Set 8 Sep 5 Set 8 Sep 5 Set 8 Sep 6 Set 8 Se	wizard, Step 3					
pplication of wireless network	Step 1 Project configuration	Step 2 Device configuration	Step 3 Radio Network configuration	Step 4 Serial configuration	Step 5 Settings overview	Step 6 Safe & transfer
Image: Solution of operation medics Image: Solution of operat	Application of wireless network	Netwo	ork settings			
Image: Signation of operation modes	.)	IO data (Wire in/Wire out)	Use Confistick RF channel:	h. F		
Bockaf fraguency ranges: Bockaf fraguency ranges: Decemposition of operation modes Brows speed/datance relation Brows 2500kps 250kps 128kps Normal speed 19kps) 🧳 🌒 🕼 🌔	Serial data (RAD-900-IFS only)	Network ID: 127			
Constraints and the second secon	.) 🖪 🔊 🛯 🏧 🔍	PLC/Modbus RTU mode	Blocked frequency ranges: Range 1: 902-903 MHz Range 2: 903-904 MHz Range 3: 904-905 MHz Range 4: 905-906 MHz			
Explanation of operation modes	.) 💷 🧆 🧠 🛄 🖬 C) PLC/Modbus RTU dual mode Modbus address: 1	Range 5: 906-907 MHz Range 6: 907-908 MHz			
Jet work speed/distance relation Shot distance Middle distance Long distance Fast speed 500kbps 250kbps 128kbps Normal speed 18kbps	Explanation of ope	eration modes				
Shot distance Middle distance Long distance	letwork speed/distance relation					
Shot distance Middle distance Long distance Fast speed 500kbps 250kbps 129kbps Normal speed 16kbps Normal speed 16kbps						
Fast speed 500kbps 250kbps 129kbps Normal speed 19kbps	Short distance	Middle distance	Long distance			
	Fast speed 500kbps	250kbps 125kbps	Normal speed 16kbps			
	Cancel					Back Next

8. On 'Wizard, Step 4', leave the settings at default and click 'Next'.

Wizard, Step 4 -					
Step 1 Project configuration	Step 2 Device configuration	Step 3 Radio Network configuration	Step 4 Serial configuration	Step 5 Settings overview	Step 6 Safe & transfer
			-		
Serial cor	nfiguration (valid for RAD-900-IFS only)				
A	Connection profile:				
.	Default Serial Communication	-			
	Interface type: P	arity:			
	Raud rate [bos]:	on bite:			
	19200 •	▼			
	Data bits: H	andshake:			
	• 8	lone 🔻			
Jancel				[Back Next



- 9. On 'Wizard, Step 5', review the data and click 'Next'
- 10. On 'Wizard, Step 6', make sure your programming cable is connected from your computer to a wireless module. Click 'Transfer' to send the configuration to the wireless modules. You will be prompted to save your configuration. Choose a file location to save your program.

Wizard, Step 4					
Step 1 Project configuration	Step 2 Device configuration	Step 3 Radio Network configuration	Step 4 Serial configuration	Step 5 Settings overview	Step 6 Safe & transfer
Wizard, Step 6					
Step 1 Project configuration	Step 2 Device configuration	Step 3 Radio Network configuration	Step 4 Serial configuration	Step 5 Settings overview	Step 6 Safe & transfer
	Transfer Kot transferred at transfer date :	Save Save as Not saved Last save date:			

11. When prompted, click 'OK' to go online to the wireless module

Save Transfer Save as Information Not transfered Last transfer date: OK									
Transfer Save as Not transferred Information Last transfer date: OK Cancel			Save						
Not transferred To use the transfer function the connection mode will now be switched to online mode. Last transfer date: OK Cancel	Transfer		Save as						
Not transferred To use the transfer function the connection mode will now be switched to online mode. Last transfer date: OK Cancel		Information		25					
Last transfer date:	Not transferred	To use th	ne transfer function the connection m	ode will now be switched to online mode.					
	Last transfer date: -	OK Cancel							



12. Click on 'Start Transfer' under 'Local Transfer' to send the configuration to each device. Once you transfer the configuration to one wireless module, move your programming cable to the next wireless module. The Transfer Window will show you which module you are connected to and which modules have had the configuration transferred. Repeat this process for all three modules until they all show 'transferred'.

Wizard, Step 6										
Step 1 Project configuration	Step 2 Device configuration	Step 3 Radio Network configuration	Step 4 Serial configuration	Step 5 Settings overview	Step 6 Safe & transfer					
La La	Choose Transfer Dialog Contracting is transferred to the device connected to the PC. Contracting and transferred to the device connected to the PC. Contracting and transferred to the device connected to the PC. Contracting and transferred to the device connected to the PC. Contracting and transferred to the device connected to the PC. Contracting and transferred to the device connected to the PC. Contracting and transferred to the device connected to the PC. Contracting and transferred to the device connected to the PC. Contracting and transferred to the device connected to the PC. Contracting and transferred to the device connected to the PC. Contracting and transferred to the device connected to the PC. Contracting and transferred to and devices in the project. Contracting and transferred to and devices in the project. Contracting and transferred to and devices in the project. Contracting and transferred to and devices in the project. Contracting and transferred to and devices in the project. Contracting and transferred to and devices in the project. Contracting and transferred to and devices in the project. Contracting and transferred to and devices in the project. Contracting and transferred to and transfe									
Cancel					Back Rnish					
Wizard, Step 6										
Step 1 Project configuration	Step 2 Device configuration	Step 3 Radio Network configuration	Step 4 Serial configuration	Step 5 Settings overview	Step 6 Safe & transfer					
Local Transfer Image: Control of the content device and click the "Transfer" button to start the transfer. Image: Control of the content device and click the "Transfer" button to start the transfer. Image: Control of the content device and click the "Transfer" button to start the transfer. Image: Control of the content device and click the "Transfer" button to start the transfer. Image: Content device and click the "Transfer" button to start the transfer. Image: Content device and click the "Transfer" button to start the transfer. Image: Content device and click the "Transfer" button to start the transfer. Image: Content device and click the "Transfer" button to start the transfer. Image: Content device and click the "Transfer" button to start the transfer. Image: Content device and click the "Transfer" button to start the transfer. Image: Content device and click the "Transfer" button to start the transfer. Image: Content device and click the "Transfer" button to start the transfer. Image: Content device and click the "Transfer" button to start the transfer. Image: Content device and click the "Transfer" button to start the transfer. Image: Content device and click the "Transfer" button to start the transfer. Image: Content device and click the "Transfer" button to start the transfer. Image: Content device and click the "Transfer" button to start the transfer. Image: Content devi										

Back

Finis



13. Once you have sent the configuration to each wireless module, the wireless network configuration is complete. The 4 vertical RF Link LEDs on the wireless modules should illuminate. On the master wireless module (Yellow Thumbwheel on 01) should have one amber LED illuminated (assuming there is more than one slave wireless module in the network) and depending on the antennae on the slave wireless modules, there should be an amber and module green LEDs illuminated.

The wireless network configuration is complete and is set up for transparent serial communication.

Configuring the two GW MODBUS TCP/RTU 1E/DB9 module for Modbus RTU to TCP communication

- 1. The GW MODBUS TCP/RTU 1E/DB9 comes with a default IP address of 192.168.254.254. Set your computer's IP address in the same network as the GW MODBUS TCP/RTU 1E/DB9 (192.168.254.XXX). Reference the data sheet for power connections and apply power to all three gateways.
- For the GW MODBUS TCP/RTU 1E/DB9 that will be connected to the master RAD-900-IFS wireless module (yellow thumbwheel 01), there is no configuration needed. The default settings of the GW MODBUS TCP/RTU 1E/DB9 are compatible with the settings made on the master RAD-900-IFS.
- Connect a standard straight through RJ45 Ethernet cable from your computer to the LAN port of the GW MODBUS TCP/RTU 1E/DB9 that will be connected to the RAD-900-IFS module with yellow thumbwheel address 02. Open an Internet browser and navigate to the webpage by typing in 192.168.254.254 in the address bar. Login with User Name 'Admin' and password 'admin'.

→ C û (Q https://192.168.254.254/		Q. Search
	Log In	System Settings
	User Name: Admin Tagesword.	Description: GW MODBUS TCP/RTU 1E/1DB9 Order Number: 2702764 Device Name: device name Contact: contact
	Log III	Firmware Version. 1.03

4. Next, navigate to the 'LAN Setting' tab and change the IP Address to 192.168.254.2. Click 'Apply Changes'. You will need to re-login at the new IP address once the change is made.

						Reboot Device Log O
General Settings	LAN Settings	Serial Settings	Modbus Settings	Diagnostics	Device Maintenance	
IP Address	Security					
LAN IP Address Automatic add Manual addres IP Address: Subnet Mask:	ress assignment (DHCP) is assignment 192.168.254.2 255.255.255.0)				Hardware Address 00.A0.45.98.77.78
Default Gatew	ay					Apply Changes



5. Next, navigate to the 'Serial' Settings' tab and then to the 'Port 1 Configuration' tab. Change the 'Serial Device(s)' drop down to 'Modbus RTU Master'. This is configuring the GW MODBUS TCP/RTU 1E/DB9 to interpret the serial data on the serial port as coming from a Modbus RTU Master device. Click 'Apply Changes'.

ົລ		Reboot Device Log Out
General Settings LAN Settings Serial Se	tings Modbus Settings Diagnostics Device Maintenance	
Overview Port 1 Configuration		
Serial Port Configuration	Modbus Configuration	
Port Name: Port 1 Port Mode: R5-232 ↓ Baud Rate: 19200 ↓ Parity. none ↓ Data Bits: 6 ↓ Stop Bits: 1 ↓ Flow Control: none ↓ RS-485 Terminating Resistor: off ↓ DTR Mode: off ↓ Prove Control: Stop Bits: 200 Drscard Messages With Errors: ♥	Senal Device(s): Modbus RTU Master Modbus Slaves Settings Response Timeout (ms): 1000 Inactivity Wait Time Before Tx (ms); 0	Apply Changes

6. Next, navigate to the 'Modbus Settings' tab and then to the 'Remote Modbus Addressing' tab. Since the communication coming from the RAD-900-IFS wireless module is Modbus RTU and has no IP detail, we need to map the Modbus RTU serial data to the correct IP address. In this setup, we will be linking a Modbus RTU packet destined for Modbus ID 12 to Modbus TCP device 192.168.254.12 so any packet with Modbus ID 12 coming from the serial port of the RAD-900-IFS module will be sent to IP address 192.168.254.12.

Click the 'Add' button and set the

Device ID to 12

Remote IP Address to 192.168.254.12

Click Apply Changes

â									Reboot Device Log Out
General Settings	LAN Settings	Serial Settings	Modbus Setting	Diagnos	tics.	Device Mair	tenance		
Modbus Overview	Modbus TCP Configura	ation Remote Mod	Ibus Addressing To	CP/IP Connection	Shared	Vernory	Device ID	Alias	
Remote Modbus Add	iressing								
Device ID	Remote IP N Address	Remote todbus TCP Tim Port (n	eout Connection Is) Enabled	Send Writes First	Disable Broadcast Messages	Route on Pre-Alias Device ID	Delete Remote		
12	192 168 254 12	502 10				Delete All			
									Apply Changes

The configuration for the first GW MODBUS TCP/RTU 1E/DB9 is now complete.



7. Connect a standard straight through RJ45 Ethernet cable from your computer to the LAN port of the GW MODBUS TCP/RTU 1E/DB9 that will be connected to the RAD-900-IFS module with yellow thumbwheel address 03. Open an Internet browser and navigate to the webpage by typing in 192.168.254.254 in the address bar. Login with User Name 'Admin' and password 'admin'.

C 1 Ahttps://192.168.254.254/	Q. þearch
Log In	System Settings
User Name: Adapted Time	Description: GW MODBUS TCP/RTU 1E/1DB9
Addition Addition	
Password.	Order Number: 2702764
Password.	Order Number: 2702764 Device Name: device name
Password.	Order Number: 2702764 Device Name: device name Contact: contact

8. Navigate to the 'LAN Setting' tab and change the IP Address to 192.168.254.3. Click 'Apply Changes'. You will need to re-login at the new IP address once the change is made.

9						Reboot Device Log O
General Settings	CAN Settings	Serial Settings	Modbus Settings	Diagnostics	Device Maintenance	
IP Address	Security					
LAN IP Address						Hardware Address
Automatic addr Manual addres	ess assignment (DHCP) s assignment					00.A0.45.98.77.78
IP Address:	192.168.254.3					
Subnet Mask: Default Gatewa	255 255 255 0 IV					
						Apply Changes
						and the state of t

9. Navigate to the 'Serial' Settings' tab and then to the 'Port 1 Configuration' tab. Change the 'Serial Device(s)' drop down to 'Modbus RTU Master'. This is configuring the GW MODBUS TCP/RTU 1E/DB9 to interpret the serial data on the serial port as coming from a Modbus RTU Master device. Click 'Apply Changes'.

<u>م</u>			Reboot Device Log Out
General Settings LAN Settin	ngs Serial Se	ttings Modbus Settings Diagnostics Device Maintenance	
Overview Port 1 Co	nfiguration		
Serial Port Configuration		Modbus Configuration	
Port Name. Port Mode: Baud Rate: Parity. Data Bits: Stop Bits. Flow Control RS-485 Terminating Resistor. DTR Mode: Rx Timeout Between Packets (ms). Discard Messages With Errors.	Port 1 R\$-232 19200 100 10 10 0ff 200 V	Status Second Device(s). Modbus Slaves Settings Response Timeout (ms) Inactivity Wait Time Before Tx (ms) 0 Inactivity Wait Time Before Tx (ms) 0 Send Write Messages First 0 Derice ID Offset Mode: 0 Derice ID Offset Mode: 0 Modbus Master Settings 0 Modbus Master/Slaves Settings Disable all Forward Broadcasts From Serial Master: 1 Private Slave Device ID Range: min: 1 max 1	



10. Navigate to the 'Modbus Settings' tab and then to the 'Remote Modbus Addressing' tab. Since the communication coming from the RAD-900-IFS wireless module is Modbus RTU and has no IP detail, we need to map the Modbus RTU serial data to the correct IP address. In this setup, we will be linking a Modbus RTU packet destined for Modbus ID 13 to Modbus TCP device 192.168.254.13 so any packet with Modbus ID 13 coming from the serial port of the RAD-900-IFS module will be sent to IP address 192.168.254.13.

Click the 'Add' button and set the

Device ID to 13

Remote IP Address to 192.168.254.13

Click Apply Changes

â										Reboot Device Log Out
General Settings	LAN Settings	Senal Settin	gs 🤇	lodbus Settings	Diagnos	lics	Device Mair	Itenance		
Modbus Overview	Modbus TCP Con	figuration Remo	te Modbus Ad	dressing) TO	P/IP Connection	Shared	Memory	Device ID	Alias	
Remote Modbus Ad	Idressing									
Device (D	Remote IP	Remote Modbus TCP Rort	Timeout (ms)	Dedicated Connection Enabled	Send Writes First	Disable Broadcast Messages	Route on Pre-Alias Device ID	Delete Remote		
13	192.168.254.13	502	1000							
							Delete All			
										Apply Changes

The configuration for this GW MODBUS TCP/RTU 1E/DB9 is now complete.

Configuring the IL ETH BK DI8 DO4 2TX-PAC

 Plug in a straight through RJ45 cable from your computer to the IL ETH BK DI8 DO4 2TX-PAC. Launch IPAssign_v1.1.3. Reference the data sheet for power connections and apply power to both IL ETH BK DI8 DO4 2TX-PAC modules. The modules come with a default IP setting of BootP. IPAssign is a free BootP server. Step through the IPAssign wizard and assign the IL ETH BK DI8 DO4 2TX-PAC an IP of 192.168.254.12.





2. Once an IP address has been assign, open an Internet browser and navigate to IP address 192.168.254.12. Navigate to the 'Inline Station' folder and to the 'Services' menu. Click the 'Disable' setting for "Plug&Play-Mode'. Enter a password of 'private' and click 'Apply and Reboot'. Disabling the Plug&Play mode puts the module into a full run mode which allows for reading and writing of all I/O points. If the Plug&Play mode is left enabled, reading of I/O points is possible but writing to outputs is not possible.

← → C ③ Not secure	92.168.254.120 ervices.htm					
PHENIX	IL ETH BK DI8 DO4 2TX-PAC	last update: 10:45:29				
	Services					
	Plug&Play					
	Plug&Play-Mode O Enable	Disable				
IL ETH BK DI8 DO4	The status enable becomes effective after a re The status disable is taken over immediately.	start of the IL ETH BK DI8 DO4.				
Device Information	Enter Password	Apply Apply and Reboot				
Device Configuration						
Inline Station						
Services	Control Device Function					
Process Data Monitoring	This service can be used to confirm the periph	eral faults of all modules.				
Remote Diagnostics						
Bus Configuration	Enter Password	Confirm				
PCP Configuration						
P Home						

3. Next, navigate to the 'Process Data Monitoring' menu. Configure the 'Process Data Watchdog Timeout' to 0. Enter a password of 'private' and click 'Apply'. This disables the watchdog timer on the module. This can be enabled if the application requires, but in this example this function is disabled.

PHENIX	IL ETH BK DI8 DO4 2TX-PA	C last update: 10:47:11
	Proces	s Data Monitoring
	Fault Response Mode	 Reset Fault Mode (default) Standard Fault Mode Hold Last State Mode
General Instructions	Process Data Watchdog Timeout	0 ms
Device Information Device Configuration	The time is indicated in millisec value of 0 ms disables the Proc	onds and ranges from 200 ms to 65,000 ms. A ress OUT Data Monitoring.
Inline Station	Enter password	Apply
Process Data Monitoring		
Remote Diagnostics	Network Failure	
Bus Configuration	Status	No network failure (nF) occurred.
PCP Configuration	Enter password	Confirm
Description of the second seco		

The configuration for this IL ETH BK DI8 DO4 2TX-PAC is now complete.



 Plug in a straight through RJ45 cable from your computer to the second IL ETH BK DI8 DO4 2TX-PAC. Launch IPAssign_v1.1.3. The IL ETH BK DI8 DO4 2TX-PAC modules come with a default IP setting of BootP. IPAssign is a free BootP server. Step through the IPAssign wizard and assign the IL ETH BK DI8 DO4 2TX-PAC an IP of 192.168.254.13.



5. Once an IP address has been assign, open an Internet browser and navigate to IP address 192.168.254.13. Navigate to the 'Inline Station' folder and to the 'Services' menu. Click the 'Disable' setting for "Plug&Play-Mode'. Enter a password of 'private' and click 'Apply and Reboot'. Disabling the Plug&Play mode puts the module into a full run mode which allows for reading and writing of all I/O points. If the Plug&Play mode is left enabled, reading of I/O points is possible but writing to outputs is not possible

\leftarrow \rightarrow C \oplus 192.168.254.1	ervices.htm	
PHENIX	IL ETH BK DI8 DO4 2TX-PAC	last update: 10:50:03
	Service	s
and the second s	Plug&Play	
	Plug&Play-Mode Canable	 Disable
IL ETH BK DI8 DO4	The status enable becomes effective after a The status disable is taken over immediately	restart of the IL ETH BK DI8 DO4.
Device Information	Enter Password	Apply Apply and Reboot
Device Configuration		
☐ Inline Station		
Services	Control Device Function	
Process Data Monitoring	This service can be used to confirm the peri	pheral faults of all modules.
Remote Diagnostics		
Bus Configuration	Enter Password	Confirm
PCP Configuration		
Home		



6. Next, navigate to the 'Process Data Monitoring' menu. Configure the 'Process Data Watchdog Timeout' to 0. Enter a password of 'private' and click 'Apply'. This disables the watchdog timer on the module. This can be enabled if the application requires, but in this example this function is disabled.

PHŒNIX	IL ETH BK DI8 DO4 2TX-	PAC last update: 10:47:11
	Process Data Monitoring	
	Fault Response Mode	Reset Fault Mode (default) Standard Fault Mode Hold Last State Mode
General Instructions	Process Data Watchdog Timeout	0 ms
Device Information Device Configuration	The time is indicated in millix value of 0 ms disables the P	seconds and ranges from 200 ms to 65,000 ms. A rocess OUT Data Monitoring.
Inline Station	Enter password	Apply
Process Data Monitoring		
Remote Diagnostics	Network Failure	
Bus Configuration	Status	No network failure (nF) occurred.
PCP Configuration	Enter password	Confirm
Distance Home		

The configuration for this IL ETH BK DI8 DO4 2TX-PAC is now complete.

Making the physical connections

In this setup, there are three stations, the master station, slave station 1 and save station 2. Connect an antenna to each wireless module and make the physical connections for the data cables for each station shown below.

Master Station

- 1. Connect a RJ45 cable from the computer to GW MODBUS TCP/RTU 1E/DB9 with IP address 192.168.254.254.
- 2. Connect a Straight through RS232 cable from GW MODBUS TCP/RTU 1E/DB9 to RAD-900-IFS with yellow thumbwheel of '01'.





Slave Station 1

- 1. Connect a Straight through RS232 cable from GW MODBUS TCP/RTU 1E/DB9 with IP address 192.168.254.2 to RAD-900-IFS with yellow thumbwheel of '02'.
- Connect a RJ45 cable from computer to GW MODBUS TCP/RTU 1E/DB9 with IP address 192.168.254.2 to the IL ETH BK DI8 DO4 2TX-PAC configured with IP address 192.168.254.12



Slave Station 2

- 1. Connect a Straight through RS232 cable from GW MODBUS TCP/RTU 1E/DB9 with IP address 192.168.254.3 to RAD-900-IFS with yellow thumbwheel of '03'.
- 2. Connect a RJ45 cable from computer to GW MODBUS TCP/RTU 1E/DB9 with IP address 192.168.254.3 to the IL ETH BK DI8 DO4 2TX-PAC configured with IP address 192.168.254.13





Your setup is complete and you are ready to verify communication. Your network layout should match the drawing below.



	1	2	3
GW MODBUS TCP/RTU 1E/DB9	192.168.254.254	192.168.254.2	192.168.254.3
RAD-900-IFS	01	02	03
IL ETH BK DI8 DO4 2TX-PAC		192.168.254.12	192.168.254.13

Verifying communication with Modscan32

- 1. Launch Modscan32 on the computer connected to the Master Station's GW MODBUS TCP/RTU 1E/DB9.
- 2. Verify your computer has a unique IP address in the same network as the GW MODBUS TCP/RTU 1E/DB9's and IL ETH BK DI8 DO4 2TX-PAC (192.168.254.XXX).
- 3. Make the following settings in the 'ModSca1' window.
 - a. Device Id: 12
 - b. MODBUS Point Type: 03: Holding Register
 - c. Address: 8002
 - d. Length: 1

ModScan32 - ModSca1	
File Connection Setup View Window Help	
🖬 ModScal	
Address: 8002 Device Id: 12 MODBUS Point Type Valid Slave Responses: 0	
Length: 1 103: HOLDING REGISTER Reset Ctrs	
** Device NOT CONNECTED! **	



4. Click on the 'Connection' drop down and click 'Connect'.

ModScan32 - ModSca1		
File Connection Setup	View Window Help	
Disconnect		
Auto-Start		
QuickConnect		
Address: 8002 Length: 1	Device Id: 12 MODBUS Point Type Number of Polls: 0 Valid Slave Responses: 0 03: HOLDING REGISTER Reset Ctrs	
** Device NOT CONN 48002: <000000000	INECTED! ** J0000000>	

5. Configure the 'Connect Using' drop down for 'Remote Modbus TCP Server' and the 'IP Address' for the Master GW MODBUS TCP/RTU 1E/DB9 (192.168.254.254). Click 'OK'.

	Remote r	modbusTCP Ser	ver 🔽
		IP Address: Service Port:	192.168.254.254
onfiguration—			
Baud Rate:	19200	-	Hardware Flow Control Wait for DSR from slave
ord Length:	8	T	DTR Control DISABLE
Parity:	EVEN	–	RTS Control DISABLE -
Stop Bits:	1	~	Delay 0 ms after RTS before transmitting first character
			Delay 0 ms after last character before releasing RTS



6. A connection to the IL ETH BK DI8 DO4 2TX-PAC with IP address 192.168.254.12 should now be established. The 'Number of Polls' and 'Valid Slave Responses' should be incrementing continuously.

B ModSca1	
Device Id: 12 Address: 8002 MoDBUS Point Type Length: 1 03: HOLDING REGISTER Valid Slave Responses: 16	
48002: <000000000000>	

7. Make sure the Binary view is selected in Modscan and then double click on the 0's next to 48002. You can then toggle the output register of the IL ETH BK DI8 DO4 2TX-PAC at IP 192.168.254.12. Once you check the boxes in the 'Write Register' window and click 'Update', an LED on the IL ETH BK DI8 DO4 2TX-PAC should illuminate.

File Connection Setup View Window Help	
ModScal	
Address: 8002 Device Id: 12 MODBUS Point Type Length: 1 03: HOLDING REGISTER 48002 000000000000000000000000000000000000	

- 8. Click on File, New to open a new connection window. Follow the same steps for the second IL ETH BK DI8 DO4 2TX-PAC with ID 13.
- 9. Your setup is complete and Modbus TCP to TCP communication has been established.



Disclaimers and notes

- 1. The purpose of this document is to provide basic configuration settings to show communication. Each application has different requirements and those need to be discussed before implementing any solution.
- 2. The setup described in this document, whether being simulated with Modscan or with a standard PLC, will only pass Modbus data from one point to another. There is no way to pass standard TCP data (access web managers, ping etc) over this wireless link.
- 3. In this setup, Modbus communication is the only protocol supported. A poll-response, round robin polling scheme is recommended as best practice.
- 4. This setup was a point to multi-point setup in a bench test environment. The addition of repeaters and RF interference can cause added latency and should be expected. If there are concerns about these items a temporary installation should be tested.
- 5. The installation of these components in a real application is at the discretion of the user.