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title: WLAN Reader - User Manual

a specification

WLAN READER



USER MANUAL for PUR-MR-250W PUR-MR-500W PUR-SR-500W

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RFID

Reader

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1 Configuring the WLAN Interface

1.1 Introduction

The PUR-SR and PUR-MR are reader with a WLAN interface for communication. Since WLAN is not plug & play and always needs a configuration, the readers offer an interface to configure the WLAN interface using USB. To do this there must be a rough understanding of the architecture of the device.

There are two components in the readers:

- WLAN Module
- **RFID** Reader

Usually the WLAN Module communicates direct with RFID-Reader and just passes the data, which it gets form the WLAN interface to the RFID Reader and vice versa. This is the standard operating mode, where the RFID Reader can be controlled using the Reader-Host-Protocol.

To configure the WLAN Module, there are two ways. One way is to configure it using the UART interface of the WLAN Module, the other way is to configure it using the connected WLAN interface. Sind the second possibility, using the WLAN interface, is very dangerous, because if there happens any error while the configuration the WLAN Module can perhaps not be connected any more, the first possibility using UART is much more safe.

To do this, the reader was extended with a special mode so it can bypass special commands from USB to UART. Therefore a extra software was created to activate this special mode and to send commands to the WLAN Module. This software is called "MR WLAN console".

this mode the reader bypasses the complete In communication from UART to USB and vice versa. So there can be no communication with the reader using the Reader-Host-Protocol.



UART

WLAN

Module



1.2 WLAN Module

The used WLAN Module is the WiFly GSX from the company Roving Networks. For any further configuration the User Manual for the module is required. This can be directly downloaded from the homepage of the company.

http://www.rovingnetworks.com/files/resources/WiFly-RN-UM.pdf Link:

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1.3 WLAN Console

The WLAN Console is a very simple tool to communicate with the WLAN Module. It offers the possibility to

- Send a command to the WLAN Module
- Send a batch file with commands to the WLAN module
- Reset the WLAN Module to factory settings
- Switch the WLAN Module to an initial AdHoc Mode
- Switch the Reader to the Bootloader without using WLAN

RF-Embedded - RFID Reader (COM12)	Disconnect
CARF-Em D Te	nbedded echnology
Switch to Boostloader Switch to A nand Beud: 11520 C Skart Command Mode	drice Factory Reset

At first the reader must be connected to the WLAN

Console. So the first step is to connect the reader via USB to the PC. The driver for the USB interface is either installed with the Reader Suite or with the WLAN Console. The USB driver is the same like for all

.01150	ic.	
Port:	Kommunikationsanschluss (COM1)	
	Kommunikationsanschluss (COM1)	
	USB Serial Port (COM2)	
	Bluetooth-Kommunikationsanschluss (COM6)	
	RF-Embedded - RFID Reader (COM12)	

other RF-Embedded USB readers. If the device is connected to the PC, the WLAN Console must be started. In the upper part of the application, the COM port of the reader must be selected. After this the reader can be opened by pressing the "Connect" button.

1.3.1 Static Commands

In this mode, when the reader is only connected, the application can be used to send some commands to the reader. These commands are:

• Switch to Bootloader

The reader is switched to the bootloader, which only works via USB. This command can be used to update the reader even if there is a problem with the firmware or the WLAN interface.

• Switch to AdHoc

By sending this command, the WLAN Module is configured in a default AdHoc mode. The parameters are:

SSID: WiFly-GSX-XX, where XX is the final two bytes of the devices MAC address Channel: 1

DHCP: OFF

IP address: 169.254.1.1

Netmask: 255.255.0.0

Caution: This setting is not persistant.

• Factory Settings

This command rests all settings of the WLAN Module to the factory settings.

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1.3.2 Command Mode

To enter the command to configure the WLAN Module, the Start Command Mode button must be pressed.

CAUTION!	If the command mode is activated, the reader cannot be controlled via WLAN
	because every Reader-Host-Protocol command is bypassed to USB.

To successfully start the command mode, a valid baud rate must be configured. The configured baud rate is the baud rate with which the RFID Reader communicates with the WLAN Module. By default the baud rate is 115200 baud, which is the baud rate that is used by the RFID Reader to communicate in the normal mode.

CAUTION!	After a factory reset the baud rate is set to 9600 baud. Since the reader
	communicates in normal mode with a baud rate of 115200 baud the reader will not
	communicate via WLAN.
	After a factory reset the baud rate of the WLAN module must be set to 115200
	baud:
	set uart baud 115200

So if the right baud rate was selected and the command mode could be started, the WLAN Module can be configured using the syntax of the WiFly GSX User Manual.

The easiest way to test the command mode is to enter the command:

get everything

If the command mode is working every setting will be returned.

Example – Infrastructure

This example shows how to configure the module to join an unencrypted WLAN access point:

set ip dhcp 1 Enables the module to use DHCP

set wlan auth 0

Sets the WLAN authentication mode to "Open"

set wlan channel 0

Sets the WLAN channel to be scanned

set wlan join 1

Sets the policy for automatically joining networks to:

"Try to join the access point that matches the stored

SSID, passkey and channel. Channel can be set to

o for scanning. (Default)"

set wlan ssid RF-Embedded\$WLAN

Sets the WLAN SSID to "RF-Embedded WLAN"

save

Saves the settings permanent

reboot

Reboots the WLAN Module

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Example – AdHoc			

This example shows how to configure the module to create an unencrypted AdHoc network :

```
set ip dhcp 0
       Disables the module to use DHCP
set ip address 192.168.1.100
       Sets the IP to 192.168.1.100
set ip netmask 255.255.255.0
       Sets the subnet mask to 255.255.255.0
set wlan auth 0
       Sets the WLAN authentication mode to "Open"
set wlan channel 11
       Sets the WLAN channel to the channel 11
set wlan join 4
       Sets the policy for automatically joining networks to:
              "Create an Adhoc network, using stored SSID, IP
              address and netmask. Channel MUST be set.
              DHCP should be o (static IP) or set to Auto-IP with
              this policy. (unless another Adhoc device can act as
              DHCP server)"
set wlan ssid RF-Embedded$WLAN
       Sets the WLAN SSID to "RF-Embedded WLAN"
save
       Saves the settings permanent
reboot
       Reboots the WLAN Module
```

These lists of commands can also be stored in batch file and can be loaded with the application. The application then tries to send every line that is in the file to the WLAN Module.

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2 Configuring the OS

2.1 Ad-Hoc

The following chapters show you how to connect the reader with your PC or Mac. The reader comes with these default settings:

WLAN:	Ad-Hoc
SSID (MR):	RF-Embedded MR WLAN
SSID (SR):	RF-Embedded SR WLAN
IP:	192.168.1.100 / 255.255.255.0
Port:	2000

2.1.1 <u>Mac (Lion)</u>



If the device is configured to create an Ad-Hoc network and the device is switched on, the new Ad-Hoc WLAN should appear in the list of available WLAN networks. To connect to this network, just select the entry in list.

As default most OS are set to use a DHCP-Server in a WLAN to get an IP. Since there is no DHCP-Server in the Ad-Hoc WLAN, the OS will not get any response on its requests and will fall back to an IP that usually looks like this: 169.254.XXX.XXX.

This IP is not in the IP-subnet of the PUR-MR-250W, thus the IP of the WLAN-adapter must be changed. Therefore the system preferences must be opened.



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⊖ Wi−Fi Selbst zugewies. IP	<u></u>	Status: Ei	in	Wi-Fi deaktivie	ren
Bluetooth-DUN Nicht verbunden	8	W 16 ZL	i–Fi hat die selb 59.254.240.18 ugreifen.	st zugewiesene IP-A und kann nicht auf d	dresse as Internet
Ethernet Nicht verbunden	~~ >	Netzwerkname:	RF-Embedded	MR WLAN	\$
 FireWire Nicht verbunden Bluetooth-PAN Nicht verbunden RF-Embedded Nicht verbunden 	 		Auf neue Ne Bekannte Netzw verbunden. Fall- vorhanden ist, r Netzwerk auswä	tzwerke hinweise erke werden automatis kein bekanntes Netzwa nüssen Sie manuell ein nüsen.	n .ch verk
+ - * •		⊻ Wi-Fi-Status in der Menüleiste anzeigen		Weitere Optione	en ?

On the first view one can see that the Wi-Fi/AirPort adapter is connected to the desired network but has a self assigned IP. This must be changed to one that is in the subnet of the PUR-MR-250W.

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To change this, it is necessary to open the advanced settings with the button at bottom right.

WI-FI	ICP/IP DNS WINS	802.1X Proxie	s Hardware
Pv4 konfigurieren:	DHCP	\$	
IPv4-Adresse:	169.254.240.18		DHCP-Lease" erneuern
Teilnetzmaske: Router:	255.255.0.0	DHCP-Client-ID	: (Falls erforderlich)
Pv6 konfigurieren:	Automatisch	\$	
Router:			
IPv6-Adresse:			
Präfix-Länge:			

In the TCP/IP tab the IP settings can be changed. By default
the IPv4 configuration is set to DHCP. This must be changed
to "Manual" configuration. If this is done, the IP can be
entered. To communicate with the reader the following
settings can be configured:

IP: 192.168.1.101 Subnet: 255.255.255.0

Wi-Fi	ICP/IP DNS WINS	802.1X	Proxies	Hardware	
IPv4 konfigurieren:	Manuell		\$		
IPv4-Adresse:	192.168.1.101				
Teilnetzmaske:	255.255.255.0				
Router:					
IPv6 konfigurieren:	Automatisch		\$		
Router:					
IPv6-Adresse:					
Präfix-Länge:					
			<u></u>		
			Abb	rechen	ОК

After the change the TCP/IP settings should look like this:

This can now be acknowledged by pressing "OK".

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AN Reader - User Manual org Netzwerk Netzwerk Image: Status and Status Netzwerk Image: Netzwerk Image: Status and Status Image: Netzwerk Image: Netzwerk <		Document Technical Specification	version: v1.01 status: draft date: 2013-03-05
he settings are changed, the se must be accepted by ng the Accept button at n right. is done, the Wi-Fi/AirPort ow "Connected" as status.	tle: WLAN Reader - User Manual		org
	After the settings are changed, the changes must be accepted by pressing the Accept button at bottom right. If this is done, the Wi-Fi/AirPort will show "Connected" as status.	Netzer Imagebung: Automatisch Imagebung: Automatisch Imagebung: Automatisch Imagebung: Mutomatisch Imagebung: Imagebung: Imagebung: Automatisch Imagebung: Imagebung: Imagebung: Imagebung:	werk
	changes must be accepted by pressing the Accept button at bottom right. If this is done, the Wi-Fi/AirPort will show "Connected" as status.	 Nicht verbunden Ethernet Nicht verbunden FireWire Nicht verbunden Bluetooth-PAN Nicht verbunden RF-Embedded Nicht verbunden 	verbunden und hat die IP-Adress me: RF-Embedded MR WLAN Auf neue Netzwerke hinw Bekannte Netzwerke werden auto verbunden. Falls kein bekanntes vorhanden ist, müssen Sie manue Netzwerk auswählen.

Zum Schützen auf das Schloss klicken.

Assistent ... Zurücksetzen Anwenden

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Now the reader can be connected with the Reader Suite. This is done by entering the IP and the port of the reader.

IP: 192.168.1.100 Port: 2000

😼 Add Reader Serial Ethernet Bonjour Select a reader: 192.168.0.100:52460 Or specify a custom ip with port: IP: 192. 168. 1 . 100 Port: 2000 OK 🕴 Cancel

By pressing "OK" the Reader Suite tries to connect the reader. If everything was configured right, the reader will appear in the Reader Suite main window:

eader ID /	Tag Type	Read Coun	Read Rate	Action	State			information
🦢 🦢 PUR RM2 - 00-00-04-3b @ 192.168.1.100:2000	Gen2	0	0	Idle		Online	Property	Value
							ay .	Reader
							Common	
							Reader Serial	00-00-04-3b
							Reader Type	82-02-09-06
							Reader Module	PUR RM2
							Interface	192.168.1.100:2000
							Hardware Revision	Rev. 1
ADE E.	\sim	hai		7	$\neg \square$		Software Revision	Appl - v00.03 Kernel - v
	nnii)(읝(0/(0)	(은(Ő/		Bootloader Revisi	. v01.03
					~		Current Tag Type	Gen2
	'lec	ומומו	0][0	DQNV	//		System	Firmware
				91			Action	Idle
							State	Online
							Status Register	0x0000000000000000
							Attached at	2011-10-12T13:21:41
							Application	
							Reader Name	
							Location	
							Current Read	
							Different Tags	0
							Read Count	0
Start Scan for 60 🔷 seconds or 🗌 infinite				0 s	👩 Clea	ar Tags		leader Settings

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