

UHF Reader Configuration Manual

STA IR0207E	· · · ·
STA IR0507E	
STA IR1207E	
STA 4R1207E	





Reader Connections

STA IR0207E, STA IR0507E, STA IR1207E



STA 4R1207E





DB15 pin GPIO Connector diagram



	DB15 GPIO Pin definitions+							
pin⊷	1₽	2₽	3₄⊐	4↩	5₽	6 + ³	7⊷	8 ⇔
define↔	Out+ [,] port 2+ [,]	Out↩ port 1↩	GND₽	RX(RS232)+ ³	TX(RS232)⊮	GND₽	ln ↩ Port2↩	ln ↩ Port1↩
pin⊷ define⊷	9₽ GND₽	10 ₽ A+(RS485)₽	11 ↩ B-(RS485)↩	12 ₽ GND₽	13 ₽ OFF₽	14 ₽ COM₽	15 ₽ ON₽	ې ډ

Cable color codes for GPIO connector cable

1	GPIO Output	white	Wiegand data 0
2	GPIO Output	blue	Wiegand data 1
3	GND	Dark Green	GND
4	N/A		
5	N/A		
6	GND		
7	GPIO Input	purple	
8	GPIO Input	red	trigger
9	GND	black	trigger
10	RS485 A+	brown	
11	RS485 B-	yellow	
12	GND		
13	Relay OFF (default)	black white	NC
14	Relay COM	brown white	СОМ
15	Relay ON	orange white	NO



Web Configuration Tool

There is an in-built mini web server is there in the reader which can be used for general configuration of the reader.

To open the web configuration tool,

- Connect the reader to the system or directly to network using TCP/IP cable and switch on the reader
- Default IP address of the reader set from the factory is 192.168.1.200
- Make sure that the system you are using is configured with the same series IP (192.168.1.X)
- Open any web browser (IE, Firefox, Chrome etc) in your system
- Type the reader IP address in browser address bar and press enter
- You will get a web page as below

Eile Edit View History E	ookmarks <u>I</u> ools <u>H</u> elp				_ 0	X
€ € 192.168.1.220		⊽ C Soogle .	P 🖡	⋒	☆ 自	≡
Most Visited SW WorldCl	ient 🚠 Stallion:-Software For	rc 📄 ERP-Stallion 🌑 Koha> Log in to Koha 🦸 Web Hosting, Reseller 🔯 Koha> Circulation > Ch 🌔 Home - Cisco WebEx 🗌 DailyReport 🔯 31	Days of An	droid: D	a	
TT		DEIDDEXDED				ſ
		RFID READER				
Product SN :0213120	80057					
Base Items						
IP Addre	ss	192.168.001.220				-
Subnet N	lask	255.255.255.000				
Gateway		192.168.001.001				
Application	on Option	Favor quantity 👻				
Rf Power	•	Ant1: 30 dBm Ant2: 00 dBm Ant3: 00 dBm Ant4: 00 dBm				
Frequence	су Туре	Europe •				
Antenna	Selection	Anti Anti Anti Anti				
Read Ind	ication	V LED V Beep				
Work Mode						
🗖 Timer		Interval 010 ms (10-990,Must be a multiple of 10)				
🗖 Trigger	Port	Effect Time 01 S (1-255)				
Тад Туре		EPC G2 V				
Membank		EPC - (6B invalid)				

Configuration Using Demo Application

Reader can also be configured using the demo application. This application can be downloaded using the link <u>http://rfid.stallionsoft.com/Software/STA%20IR0507E/Demo/Demo.rar</u> Download and extract the files in your sytem. Run the application by double clicking on the file *STA IR0507E-Demo.exe* Connect the reader to the system using TCP/IP cable Input the reader IP address in demo application and click on *Connect* button

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Changing the IP Address

If you know the present IP address of the reader, it can be changed by using the Web configuration tool or using the demo application.

To change using web configuration tool,

- Open web configuration tool by typing the IP address in any browser.
- Change the IP address, Subnet mask & Gateway and click on *Set Now* button at the end of the page as shown below

Product SN :021312080057

Base Items				
	IP Address	192.168.001.220		
	Subnet Mask	255.255.255.000		
	Gateway	192.168.001.001		

To change using the Demo application,

• Open the demo application, input current IP address of the reader and click on *Connect* button



• Change the IP address, Subnet mask & Gateway and click on *Set* button as shown below

TCP Parameter	Setting		
IP:	192.168.1.220	Get	
Subnet Mask:	255.255.255.0		
GateWay:	192.168.1.1	Set	

If present IP address of the reader is not known, then it's not possible to connect to the reader using web configuration tool or using demo application. In such case, reader needs to be connected to the serial port. After connecting the reader, use the ChangeIP tool which can be downloaded using the link http://rfid.stallionsoft.com/Software/STA%20IR0507E/ChangeIP.rar

Extract the files and run the ChangeIP.exe

🖳 Change IP	
Com Port	Com1 Connect
IP	
Subnet	
GateWay	
	Update

Input the com port to which the reader is connected and click on the *Connect* button. ChangeIP tool will connect to reader and it will display the current TCP parameters for the reader.

🖳 Change IP		
Com Port	Com1	Connect
IP	192.168.1.220	
Subnet	255.255.255.0	
GateWay	192.168.1.1	
	Update	



Change the required parameters and click on *Update* button to store the TCP parameters in reader.

We can know the present IP address of the reader by using HyperTerminal also. For this, connect the reader to serial port and open HyperTerminal In the new connection window, type any name for the connection and click Ok button

Connection Description	×
New Connection	
Enter a name and choose an icon for the connection:	
RFID_Reader	
lcon:	
•	4
ОК Са	ancel

Select the com port number in the next window and click Ok

Connect To
RFID_Reader
Enter details for the phone number that you want to dial:
Country/region: India (91)
Area code: 484
Phone number:
Connect using: COM1
OK Cancel

Select Bits per second as 115200 and click Ok

COM1 Properties
Port Settings
<u>B</u> its per second: 115200 ▼
<u>D</u> ata bits: <u>8</u> ▼
<u>P</u> arity: None ▼
Stop bits: 1
Elow control: Hardware
<u>R</u> estore Defaults
OK Cancel Apply



Hyperterminal will connect to the serial port and it will display a blank window.

RFID_Reader - HyperTerminal		
<u>File E</u> dit <u>V</u> iew <u>C</u> all <u>T</u> ransfer <u>H</u> elp		
D 🗃 👘 🔏 🗈 🎦 😭		
Connected 00:01:29 Auto detect Auto	detect SCROLL CAPS NUM Capture Print echo	

By keeping the serial cable connected to the reader, switch off the reader and then switch on the reader. While the reader is getting on, it will send its current configuration including the TCP parameters through the serial port and it will get displayed in the hyperterminal as below.

RFID_Reader - HyperTerminal	
<u>File Edit View Call Transfer Help</u>	
□ ☞ ◎ ⑤ □ Đ ☞ RFID Reader Bootloader. EtherNet Chip OK. Jump to main >> RFID Reader Firmware. >>Device ID:021312080057 >>MAC.:201308030047 >>Ip Addr:192.168.001.220 >>SubMask:255.255.255.000 >>GateWay:192.168.001.001 >>Rf power:16dBm- 0dBm- 0dBm >> Ant Cal Value:28,28,28,28 >> Ant1 Open. >>ExBuf Head:0100,tail:0100. >>Output Port Mask:0C >>Multi. tags inventory mode. >>EtherNet Chip OK.	
<pre>>>Rfid Chip Init: >>Rfid Chip Init finished. >>Ant 0 connect OK. >>Ant 1 pot connect or not match.</pre>	
<pre>>>Ant 2 not connect or not match. >>Ant 3 not connect or not match. >>Read Init finished</pre>	
Connected 00:05:41 Auto detect 115200 8-N-1 SCROLL CAPS NUM Capture Print echo	

From this, we can know the current IP address of the reader. Web configuration tool or Demo application can connect to the reader using this IP address for making any other configuration change.



Antenna Selection

Using this option, we can enable or disable different antennas and it is mainly applicable only to STA 4R1207E reader as it got 4 antennas. For the other readers, only antenna 1 is applicable.

Connect to the reader using Web configuration tool and select the required antennas as below. Click on Set Now button to update the setting to the reader

Antenna Selection	🗹 Ant1 🔲 Ant2 🔲 Ant3 🔲 Ant4

Connect to the reader using Demo application and required antennas can be selected as below. Click on Set button to update the setting to reader



Demo application also will display the antenna status by showing the Green and Red indicator. If the antenna is connected, it will show as green and if not connected it will show as red.

RF Power Setting

Reading distance of the reader can adjust by changing this value. Maximum value is 31. If we need to reduce the reading distance, reduce this value.

To change RF power using Web configuration tool, connect the reader using network cable and open web configuration tool using the reader IP address.

Change the RF power in the text box as shown below and clik on Set Now button to update the setting in the reader.

Please note that STA IR0207E, STA IR0507E and STA IR1207E readers are having only one antenna and hence the first text box only is applicable for these readers. STA 4R1207 reader is having 4 antennas. To adjust the other antenna power, adjust the Ant2, Ant3 & Ant4 values.



To change the RF power using the Demo application, connect the reader using the network cable and connect to the reader using the IP address.

Power Setting Ante 1: 16	JBm Ante2: 0	dBm Ante3:	0 dBm A	nte4: 0 dBm
	Get		Set	

Change the RF power as shown the above picture and click on Set button.

Reading mode setting

There are two reading modes Favor Quantity and Favor Speed. When the reader needs to read tags on objects moving very fast (Vehicles moving in high speed) we can select the Favor speed mode. For all other cases, we can use the Favor quantity mode.

Web configuration tool

	Application Option	Favor quantity 👻
D	emo application	
	Favor speed	Favor quantity
	Get	Set

Frequency Type

In India we are following the Europian Frequency standard and hence select only this option as Frequency type.

Web Configuration tool	Frequency Type	Europe -
	Frequency Setting Frequency Type:	
	China	Get
	North America	
	Europe	Set
	Others	
Demo application		



Tag Reading modes

There are 3 different tag reading modes are available on the reader.

<u>Command Mode</u> : This is the default reading mode in the reader and in this mode, reader will read the tags only when the read command is received from the application software. Reader will be fully controlled by the application software.

To set the command mode in the reader, open the web configuration tool and uncheck Timer as well as Trigger check boxes.

Timer	Interval 010	ms (10-99	90,Must be a multiple of 10)
Trigger Port	Effect Time	01	s (1-255)

<u>Timer (Auto) mode</u> : In this mode, reader will automatically read the tags as per the defined interval. Reader will start reading as soon as the reader is switched on. Tag data will be sending to the output ports as per the Output Port selection.

To set the Timer mode, open the web configuration tool and check the Timer checkbox. Select the interval value as per the reading speed requirement. Setting interval as 10 means the reader will read every 10 milli seconds which is faster (100 reads per second). 100 means, reader will read tag every 100 milli seconds (10 reads per second). Trigger check box needs to be unchecked for Timer mode.

Z Timer	Interval 010	ms (10-990, Must be a multiple of 10)
Trigger Port	Effect Time	01 S (1-255)

<u>Trigger Mode</u> : In this mode, reader will read tags only when an external trigger is received. We can connect a push button or external sensor to the reader in this mode so that the reader will read based on pressing push button or output from sensor.

To set the Trigger mode, open the web configuration tool and check the Trigger Port checkbox as shown below. Effet Time value determines how many seconds reading will be active after the trigger event. If Effect time is 1 Second, reader start reading tags on trigger even and will stop reading after 1 second. If Effect time is 5 Seconds, reader will stop reading after 5 seconds.



🗖 Timer	Interval 010	ms (10-990,Must be a multiple of 10)
Irigger Port	Effect Time	01 S (1-255)

Connecting External Trigger to the Reader

We can connect push button or external sensor to the 15 pin GPIO connector and the pin numbers for the trigger port are 8 & 9. Cable colors for the cable provided with the reader are Red & Black.

Push button or Sensor can be connected to the pin 8 & 9 or to the cables Red & Black.

Tag Data selection for Timer & Trigger modes

We can define which memory segment from tag needs to be read when the reader is in Timer or Trigger mode.

Тад Туре	EPC G2 👻
Membank	EPC → (6B invalid)
First Addr	00 (Unit:byte,EPC from epc code)
Length	12 (Unit:byte)

<u>Tag Type</u> : 2 different types of Tags are available in UHF frequency. EPC G2 & ISO18000-6B. Most commonly used tag type is EPC G2.

<u>Membank</u> : There are 3 memory segments in EPC G2 tags. Those are EPC, TID & User memory. EPC is the default memory segment.

<u>First Addr</u> : This value defines the starting address of the memory for reading

Length : This value defines the number of bytes to be read

As per the above screen shot, reader will read 12 bytes of EPC memory segment starting from address 00.

Filtering tag data in Timer or Trigger mode

RFID reader normally reads the tag very fast which will result in sending the same tag number several times. To fix this, we can define a filter time in



seconds so that the reader will send the same tag data only after the defined interval.

To set the filter option, connect to the reader using the web configuration tool and check the Filter check box. Also define the filter time in seconds in the Time Window text box.

✓ Filter	Time Window 001	s(1-180)

In the above screen shot, reader will send the same tag number only after one second.

Output Selection in Timer & Trigger modes

We can select the output ports to which the tag data needs to be send for timer & Trigger modes.

Output S	election	
	⊠ RS232	
	🗏 RS485	
	Wiegand	Format Wiegand26 👻
	Ethernet	
	Relay	Hold Time 04 s

If the RS232 check box is checked, Tag data will be sending to RS232 port

If the RS484 check box is checked, Tag data will be sending to RS485 port

If the Weigand check box is checked, tag data will be sending to Weigand port. We can also select if we needs Weigand26 output format or Weigand34 output format.

If Ethernet check box is checked, tag data will be sending to Ethernet port.

If Relay check box is checked, reader will activate the Relay output after each tag read. Relay Hold time value defines how long the Relay will remain activated. If the Hold Time is 04 seconds, reader will activate the relay when a tag is read and the relay will reset to the normal position after 4 seconds.