

HKRAT-TT02 Demo Application User Guide
for EMPRESS™ 2.4GHz Active RFID Reader
(Model: HKRAR-EMWF)

Revision: 1.0.1

Before use, please read these instructions carefully.

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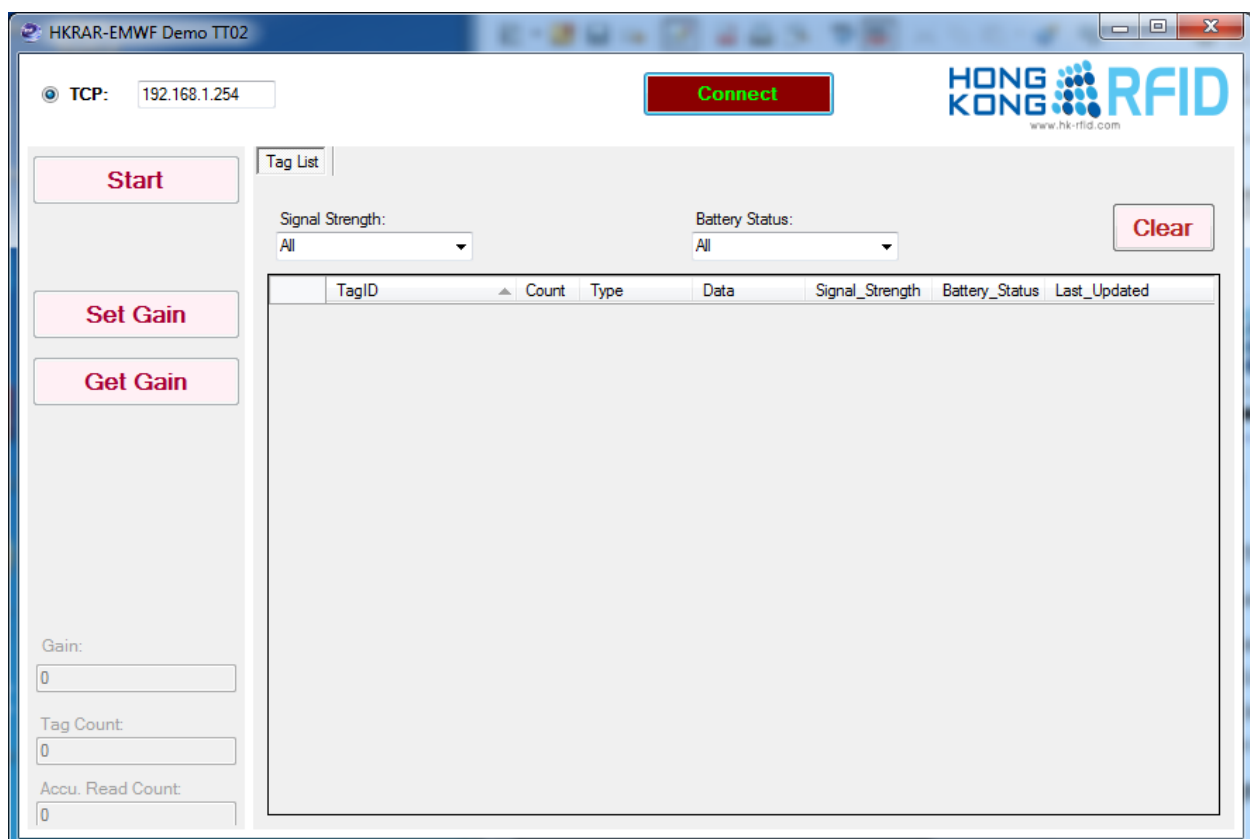
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1. Installation

1. Open Folder {path}/HKRAR-EMWF on product CD and copy files into your PC's hard disk.
2. Demo program in "{path}/Application/HKRAR-EMWF_Demo TT02.exe"
3. Sample Source Code in folder "{path}/Software Development Kit"
4. Reference document in folder "{path}/Documents"

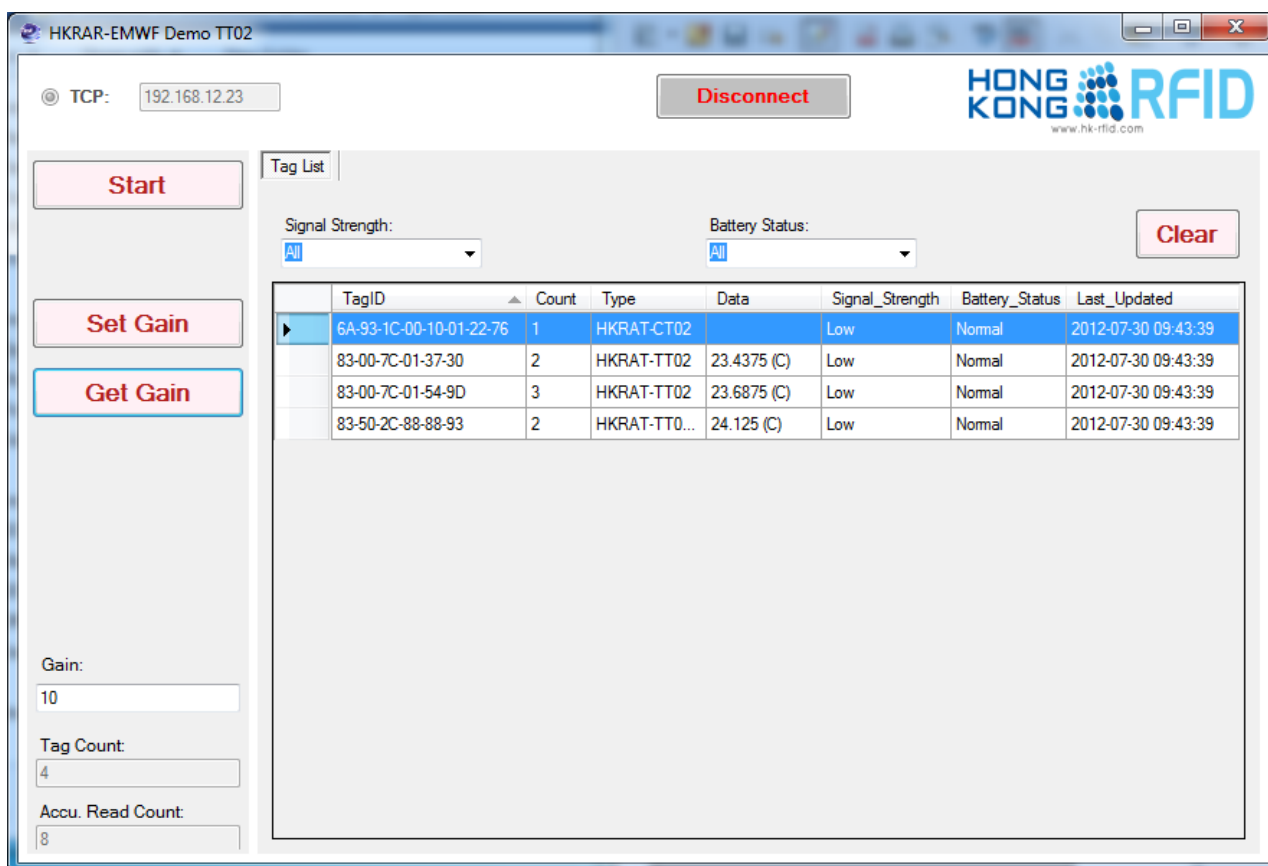
2. Execute Demo Program

1. Open folder which applications being located
2. Double click to run HKRAR-EMWF_Demo-TT02.exe program file



3. Program main screen be launched. The following is instruction for start reading.
4. Enter reader IP address to TCP text input.
5. Click "Connect" Button.

6. Click “Start Read” Button. The program will send command to reader and reader will collect the tags' information.
7. In generally, you can now see the incoming Tags' data in the main screen.



Here is description to parts of program.

TCP text input	Active Reader's IP address
Connect / Disconnect Button	The program connect to reader through IP address The program disconnect and stop communicate to the reader
Set Gain Button	This is sensibility to Reader Receive Tag Signal. Gain value in between 0 to 31. 0 is maximum sensitive (Long range) and 31 is minimum sensitive (Short range)
Get Gain Button	Get Gain Value from the connected reader

Start / Stop Button	<p>The program send a “Start Read” command to reader, then the reader will collect tags' data within the range</p> <p>The program send a “Stop Read” command to reader, reader will stop collect tags' data</p>
<i>(Table of data description as below)</i>	
Tag ID	The specific tag's unique ID
Count	Number of specific tag was being read
Type	Tag type of specific tag
Data	The temperature of specific tag in Celsius degree
Signal Strength	Current signal strength to specific tag
Battery Status	Battery Status to specific tag
Last_Updated	The last seen time of specific tag
<i>(Filter option on result table, located above of the result table)</i>	
Battery Status	Filter for battery level { All, Normal, Low }
Signal Strength	Filter for Signal Strength { All, High, Low }
<i>(Statistic information of the program)</i>	
Gain	Input the Gain Value or display the Gain value by Get Gain button
Tag Count	Number of tag being read
Total read count	Total number of times that tag being read

3. Special Data Format for HKRAT-TT02

By using HKRAR-EMWF Reader, HKRAT-TT02 Tag will return data in special data format. It will combine Tag ID and Temperature Data. Please see below format:

3.1 Return Data Format

Tag ID						Temperature	
0x14	0x40	0x12	0x34	0x56	0x78	0x12	0x34

*** If you received data by using natively method like Communication API, please reference to HKRAR-EMWF Communication API Guide.*

The example Tag ID is 14 40 12 34 56 78 and return temperature data is 12 34.

3.2 Return Temperature Format

Tag will return 2 byte size temperature data (Actual data in 12BIT). It can be convert to Celsius Degree by that equation.

If DATA's 12bit is 1 (in C#, DATA & 0x0800 > 0)

Temperature in Celsius = (Two Complement ([DATA]) * -1 * 0.0625)

Else, If DATA's 12bit is 0

Temperature in Celsius = (([DATA]) * 0.0625)

Sample 1

Suppose Data Received = "AA00000000001234"

Then,

Tag ID = "AA0000000000"

7 & 8th byte in hex = 0x1234

7 & 8th byte in binary = 0001 0010 0011 0100

Data using 2-complement

0001 0010 0011 0100

& 0000 1111 1111 1111

= 0000 0010 0011 0100

if(0000 0010 0011 0100 < 0000 1000 0000 0000)

{

0000 0010 0011 0100

& 0000 0111 1111 1111

0000 0010 0011 0100

}

Temperature in Celsius = (0000 0010 0011 0100) * 0.0625 = 564 * 0.0625 = 35.25

Sample 2

Suppose Data Received = "AA00000000001A34"

Then,

Tag ID = "AA0000000000"

7 & 8th byte in hex = 0x1234

7 & 8th byte in binary = 0001 1010 0011 0100

Data using 2-complement

0001 1010 0011 0100

& 0000 1111 1111 1111

= 0000 1010 0011 0100

if(0000 1010 0011 0100 > 0000 1000 0000 0000)

{

0000 1010 0011 0100

& 0000 0111 1111 1111

0000 1010 0011 0100

}

Temperature in Celsius = (0000 1010 0011 0100) * -0.0625 = 2612 * -0.0625 = - 163.25

Sample 3

Suppose Data Received = "AA0000000000E6E6"

Then,

Tag ID = "AA0000000000"

7 & 8th byte in hex = 0xE6E6

The tag return a error data.

Temperature in Celsius = Error

Please feel free to contact the Customer Support for any difficulty in usage or technical support, or if there's any advice for products.

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