Application Note

Using TCP Socket Communication with F2M07-xLx

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Applicable product(s)	F2M07-xLx
Variants	F2M07-SL0, F2M07-WL0

1 Summary

This application note explains how to set up TCP Socket Communication for Free2move's F2M07 RFIDS™ active RFID readers.

2 Background

The F2M07-xLx is a Free2move RFIDS™ reader with LAN interface. The default product number is F2M08-SL0.

Internally, the F2M07 offers a serial communication UART with 3 user definable serial data flow channels for RS232/422, Bluetooth™ and LAN/WLAN respectively. The latter channel is assigned to a socket which is pin-compatible with Digi's Connect ME adapters for LAN and WLAN.

The Digi Connect ME serial-LAN adapter is used with the F2M07-xLx to provide a TCP/IP LAN interface. The LAN interface can be accessed using RJ45 connector and standard Ethernet CAT5(e) cabling.

To configure the Connect ME, Digi provides various utilities, e.g. RealPort, to set-up a virtual COM-port connection for each Connect ME device. Using this method, application software written for serial port communication can be used with the F2M07-xLx reader. Free2move's active RFID demonstration and configuration application makes use of this method.

Whereas virtual COM-port is useful for smaller number of readers, it's impractical when a larger number of readers are connected to an enterprise network. Instead, the socket method is to prefer when a large number of F2M07-xLx are connected to the same network.

3 Connecting to F2M07-xLx via Sockets

3.1 Digi Connect ME

The F2M07-xLx makes use of the Digi Connect ME adapter to provide LAN interface.

The Connect ME is a connector-style embedded module that enables data sent from Ethernet converted to high-speed TTL serial data. It has a built in embedded web-server and is Telnet RFC 2217 compliant for serial port access.

3.2 Setting static IP address

A static IP address can be assigned through Digi's Devices Setup Wizard utility. It can also be modified using Digi's Device Discovery utility.

3.3 Setting up virtual COM-port

A virtual COM-port can be mapped to the Connect ME's IP address through Digi's RealPort utility, which will then be seen as a real COM port from an application.

3.4 Setting up TCP sockets

It is assumed for this section that the IP address has been assigned to the Connect ME using any of the utilities referred above. We will assume herein that this address is 192.168.1.88. When this has been done, proceed as follows:

1. Log into the Connect ME using the assigned IP address, e.g. 192.168.1.88, from any web-browser. A login screen will appear. Type in:

   — Username: root

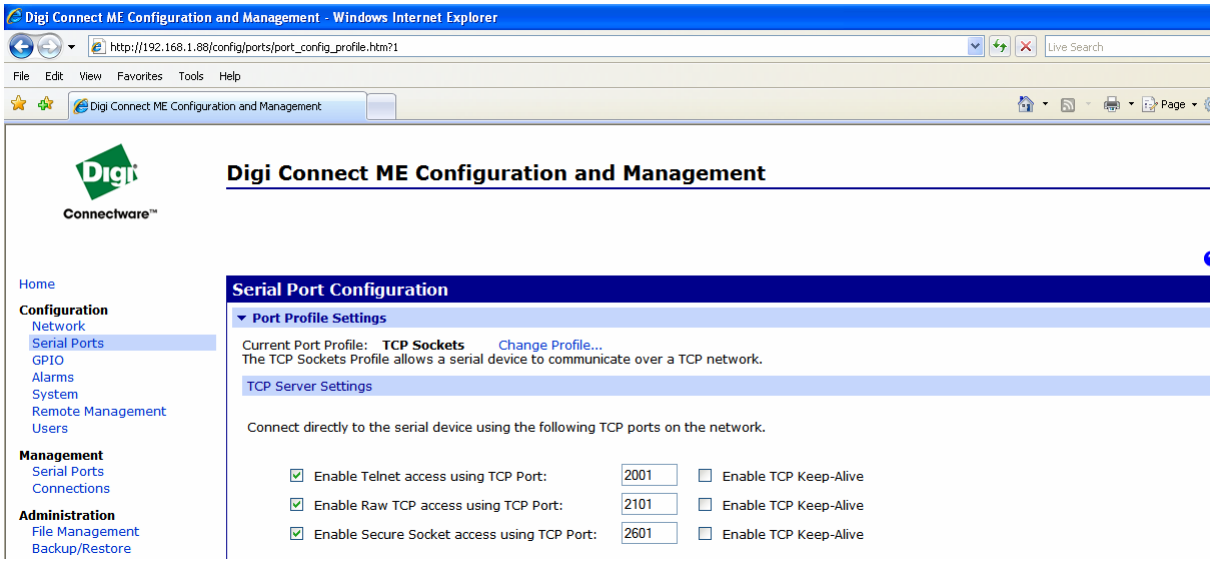
   — Password: dbps

   unless these have been changed by the user.

2. When successfully logged in, go to [Configuration]->[Serial Ports]. Then select [Port 1] under field names [Port]. The menu is then further sub-divided into three titles, which are [Port Profile Settings], [Basic Serial testing] and [Advanced Serial Settings].

3. Under [Port Profile Settings], on the first line click the hyperlink Change Profiles…

4. Change selection at radio button from default [RealPort] to [TCP Sockets]. Click [Apply] to execute. Then select 2101 as TCP port and click [Apply]. This will set port 2101 as the TCP port for accessing the F2M07-xLx.



5. Under [Basic Serial] testing change the baud rate to the maximum 230,400. Click [Apply] to execute. After finishing, log out and shut down the web explorer.

4 Using F2M07-xLx with TCP socket

The F2M07-xLx can now be accessed using the following method:

1. Create a TCP socket 2101, and connect to host IP address. Example in Visual Studio C# 2003.

```
/*namespace or library used*/

using ASOCKETLib;

……

……

namespace WindowsApplication1
{
public class Form1 : System.Windows.Forms.Form
{

      /* variables definition */

      ……

      ……

      private Tcp objSocket;
      private SocketConstants objConstants;


      private void Form1_Load(object sender, System.EventArgs e)
      {
         objSocket = new Tcp ();
         objConstants = new SocketConstants ();
         objSocket.Protocol = objConstants.asSOCKET_PROTOCOL_TELNET;
      }


      private void btnConnect_Click(object sender,System.EventArgs e)
      {
         objSocket.Connect("192.168.1.88", 2101);
      }
```

2. Send for example the “Set information flow request” command, 0xC4 0x03 0x03 0x00 0xCA, where 0xC0 0x04 is the command and length, 0x03 is selection of LAN data flow and 0x00 0xC4 is the checksum. Please refer to the “Free2move RFIDS API” manual for more information on how the “Set information flow request” command works.
3. The F2M07-xLx should now respond according to the specification.
4. Now send the “Start search for tag request” command, for example 0xC0 0x04 0xF2 0xB0 0x02 0x66, where 0xC0 0x04 is the command and length, 0xF2 0xB0 is random seed, and 0x02 0x66 is the checksum. Please see the “Free2move RFIDS API” manual for more information on how the “Start search for tag’s request” command works.
5. The F2M07-xLx should now respond according to the specification.

5 Related documents

#	Title	Issuer	Revision
1	Data sheet: Free2move RFIDS™ API	Free2move	Release 20a, 5 November 2007
2	Data sheet F2M07 RFIDS™ reader	Free2move	15 March 2008
3	Digi Connect® Family User's Guide	Digi International Inc	2006, 90000565_G

6 Related utilities

#	Title	Issuer	Revision
1	Digi International Inc	Digi International Inc	
2	Device Discovery	Digi International Inc	
3	RealPort	Digi International Inc	

7 Revision history

Version	Status	Date	Notes
0.10	DRAFT 1	May 2008	First version submitted by Ong Ming Soon
0.50	DRAFT 2	May 2008	Reviewed by Martin Harnevie Introductory texts added.
0.60	BETA 1	17 June 2008	Beta for use in projects

8 Contacts

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