

Application Note

Multi Monitoring

Version 1.2

2018-11-08



Sollae Systems

<https://www.sollae.co.kr>

Contents

1	INTRODUCTION	- 2 -
1.1	Terminology.....	- 2 -
1.2	TCP and UDP.....	- 2 -
1.3	ezTCP Operation.....	- 3 -
1.4	Multi-Monitoring.....	- 3 -
1.4.1	<i>What is "Multi-Monitoring"?</i>	- 3 -
1.4.2	<i>Diagram for exiting ezTCP</i>	- 4 -
1.4.3	<i>Diagram for CSE-M73</i>	- 4 -
2	SETTING	- 5 -
2.1	Restrictions.....	- 5 -
2.2	Setting with ezManager.....	- 5 -
2.2.1	<i>Set up "Multi-Monitoring" feature</i>	- 5 -
2.2.2	<i>Check configuration</i>	- 6 -
3	EXAMPLE OF USE	- 8 -
3.1	Connecting to CSE-M73	- 8 -
3.2	Confirm connections	- 9 -
3.2.1	<i>Confirm with telnet console</i>	- 9 -
3.2.2	<i>Confirm with DOS command of MS Windows</i>	- 9 -
3.3	Data flow.....	- 10 -
3.3.1	<i>Hosts to CSE-M73</i>	- 10 -
3.3.2	<i>CSE-M73 to hosts</i>	- 10 -
4	REVISION HISTORY	- 11 -

1 Introduction

1.1 Terminology

- "ezTCP"
ezTCP is the brand name of Sollae's products. It provides Internet connection to common serial communication devices.
- "host"
A computer (or some network device) connected to the Internet (or local private network)
- "TCP/IP"
TCP/IP is the set of communication protocols used for the Internet and private networks.

1.2 TCP and UDP

The TCP/IP is viewed as a 4-layer system, as shown below.

Application	Telnet, HTTP, etc
Transport	TCP, UDP
Network	IP, ICMP
Link	Interface card and device driver

It has two core protocols at Transport layer. One is the TCP (Transmission Control Protocol) and another is the UDP (User Datagram Protocol).

UDP communicates with network host by sending short message block. UDP does not establish an end-to-end connection and it does not guarantee ordered delivery of data.

On the other hand, TCP set up an end-to-end connection before communication begins. There are two hosts in TCP as called "Server" and "Client". The client makes a connection request to the server which waits the request. Also TCP maintains this connection until all data has been exchanged. And there are many mechanisms for reliably delivering the data unlike UDP.

For these reasons, TCP is called connection-oriented and reliable protocol, while UDP is connectionless and unreliable protocol.

1.3 ezTCP Operation

ezTCP has four operation mode called "ezTCP Mode" for TCP/IP communication like T2S(0), ATC(1), COD(2) and U2S(3). Each ezTCP Mode operates as below.

ezTCP Mode	TCP/IP
T2S(0)	TCP Server only
ATC(1)	TCP(both Server and Client)
COD(2)	TCP Client only
U2S(3)	UDP

TCP requires connection differently UDP. So it is only possible 1:1 communication between two hosts-the server and the client- at a time in TCP, while several hosts can communicate at a time in UDP-it means 1:N communication.

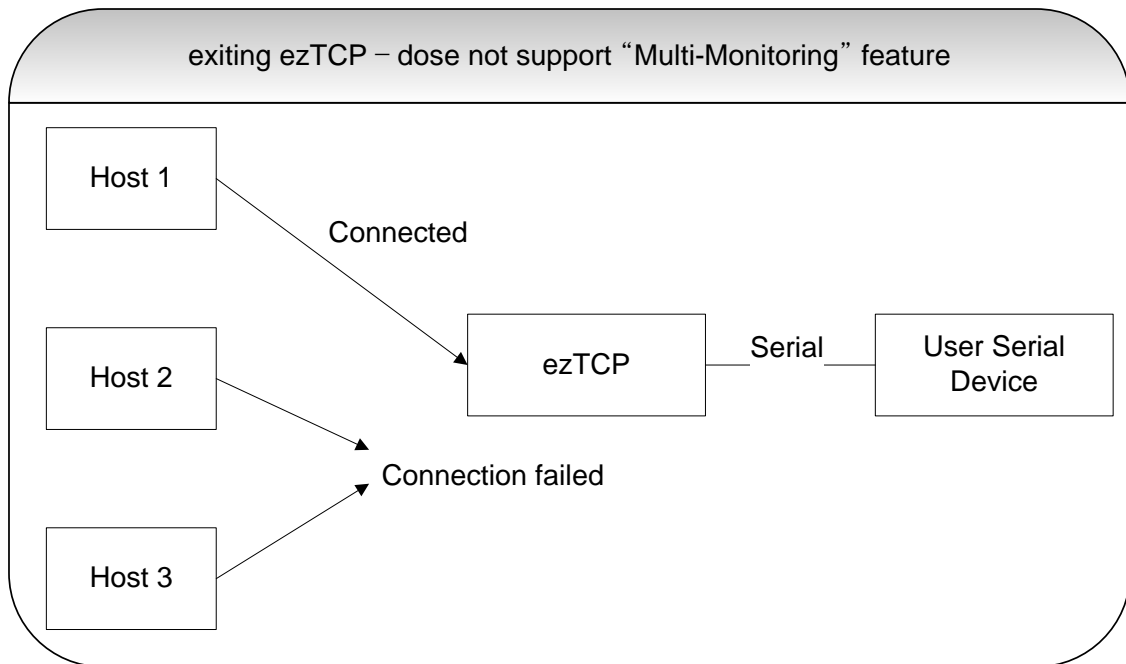
1.4 Multi-Monitoring

1.4.1 What is "Multi-Monitoring"?

When ezTCP is applied to systems which have serial devices, anyone can control and monitoring those serial devices remotely. If ezTCP user want to control or monitoring their equipments at several location at the same time, user can set up ezTCP as U2S(3) mode. But it should not use UDP in reliability system (refer to 1.2 and 1.3).

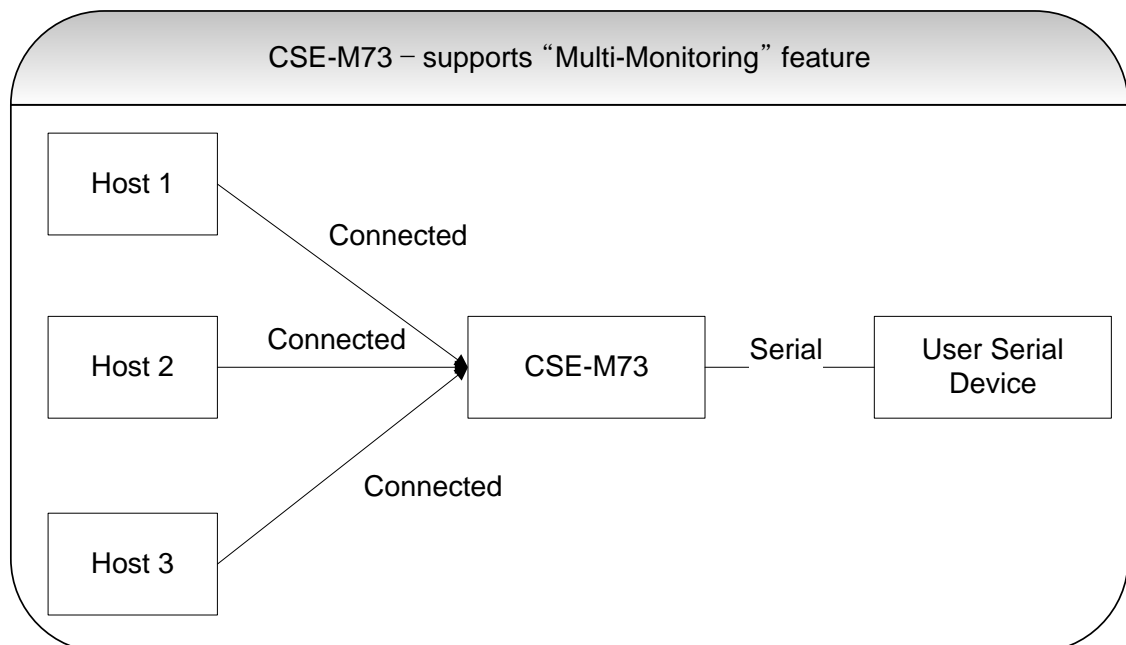
"Multi-Monitoring" feature is allowed ezTCP to communicate with several hosts in TCP at one time. It means multiple TCP connections are allowed for ezTCP, which has "Multi-Monitoring" feature. This note introduces that how to use "Multi-Monitoring" feature for product CSE-M73.

1.4.2 Diagram for exiting ezTCP



Only one TCP connection is allowed for exiting ezTCP at once.

1.4.3 Diagram for CSE-M73



CSE-M73 supports 3 Multiple TCP connections at a time. Each connection is full duplex. It means both-way communication is possible at the same time.

2 Setting

2.1 Restrictions

- Only use when ezTCP operates as "T2S(0) – TCP Server" mode.
- Maximum TCP connection is 3.

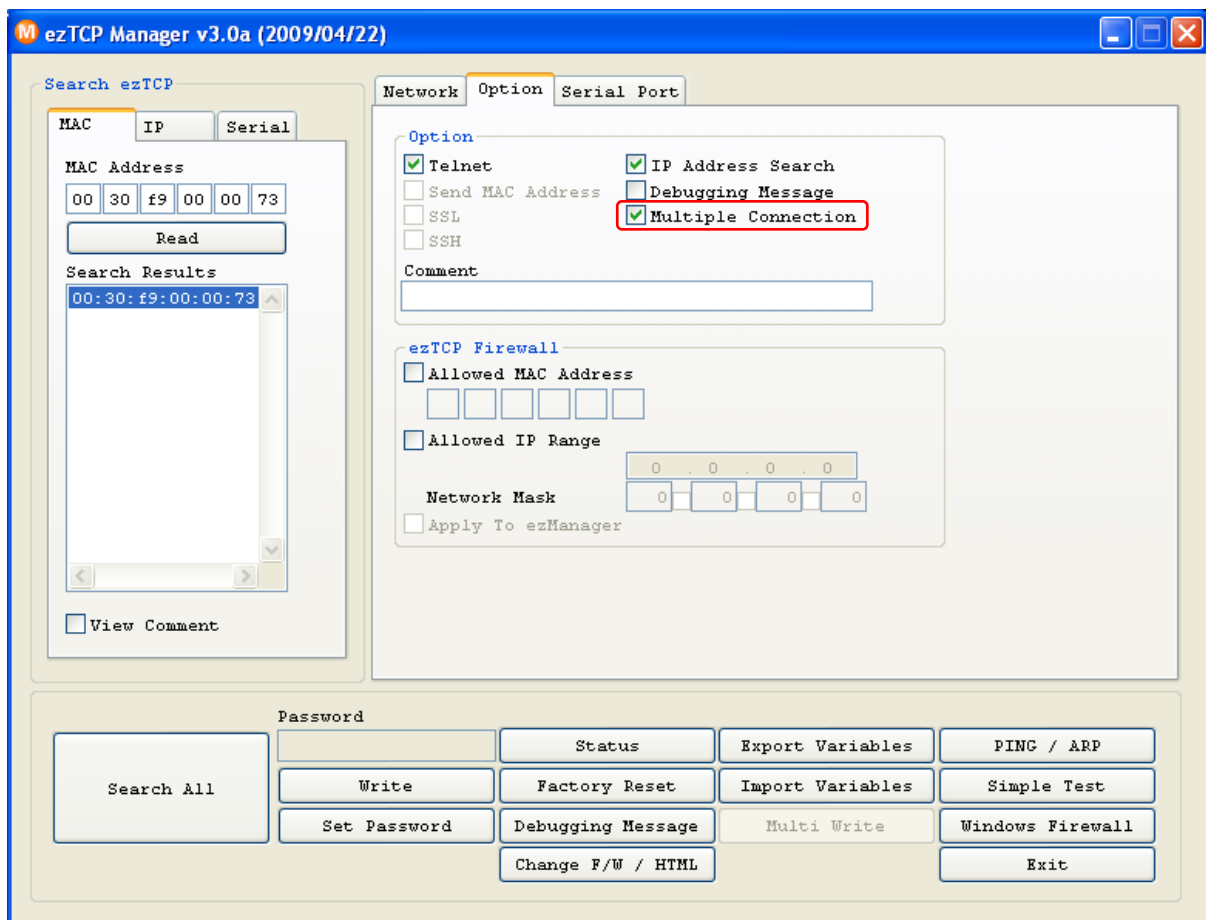
☞ *The maximum connection is 8 on the Firmware 1.6A or later versions.*

- User cannot use below features
SSL, SSH, Telnet COM Port Control Option

2.2 Setting with ezManager

2.2.1 Set up "Multi-Monitoring" feature

Set [Multiple Connection] checkbox in "OPTION" tab of ezManger.

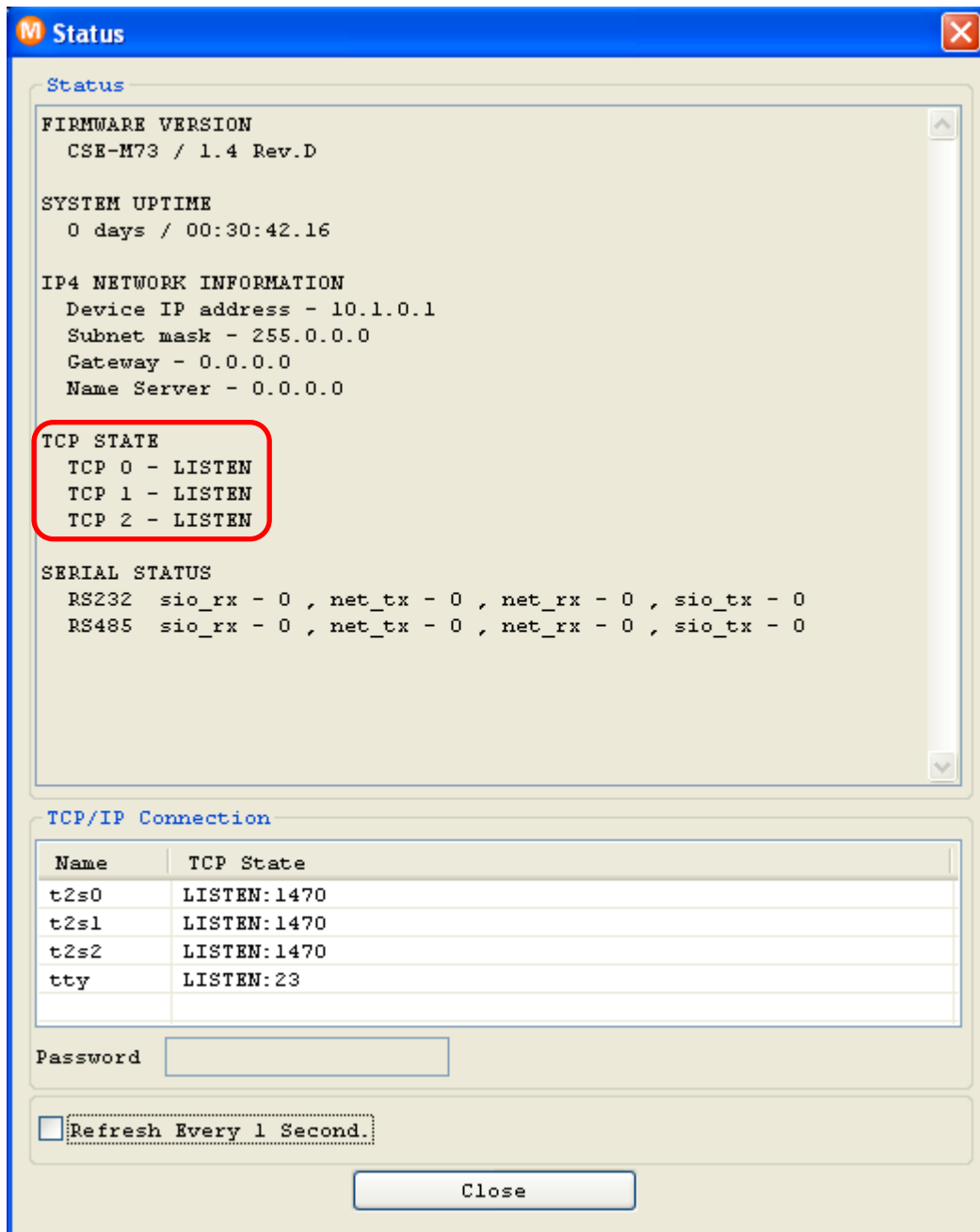


It is note that the [Communication Mode] should be set to "T2S(0) – TCP Server". The [Communication Mode] can be set at "TCP/IP" in [Serial Port] tab.

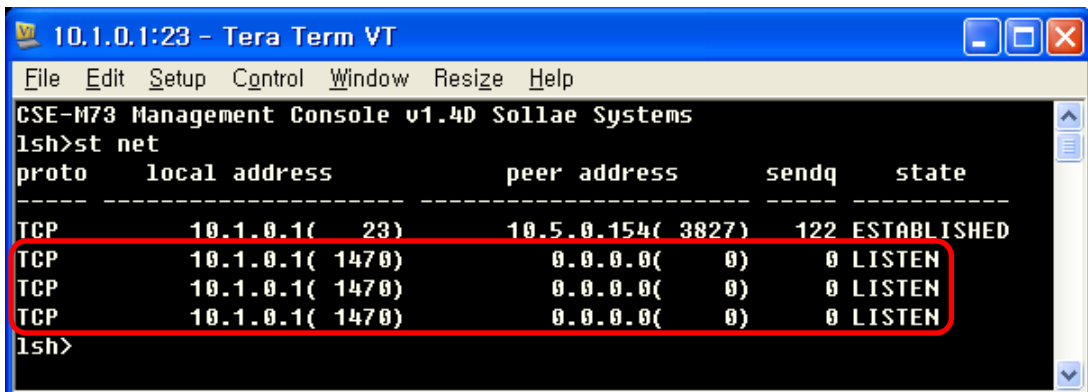
2.2.2 Check configuration

- ezManger

Click the [Status] button of ezManger. After "Status" pop-up window is opened, check if there are 3 TCP "LISTEN" state as below.



- telnet console
User can log on telnet console of CSE-M73. After log on, send "st net" command.



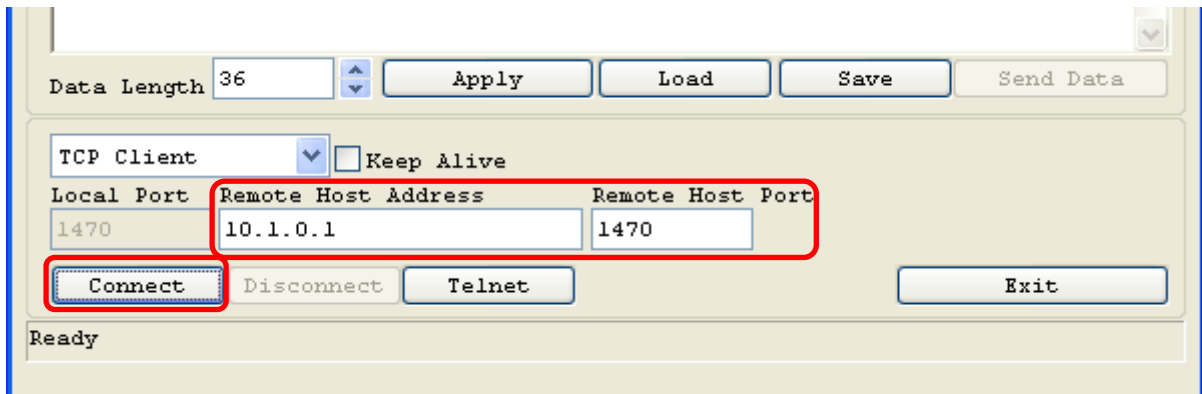
```
10.1.0.1:23 - Tera Term VT
File Edit Setup Control Window Resize Help
CSE-M73 Management Console v1.40 Sollae Systems
lsh>st net
proto    local address          peer address          sendq    state
-----
TCP      10.1.0.1( 23)         10.5.0.154( 3827)    122     ESTABLISHED
TCP      10.1.0.1( 1470)       0.0.0.0( 0)          0        LISTEN
TCP      10.1.0.1( 1470)       0.0.0.0( 0)          0        LISTEN
TCP      10.1.0.1( 1470)       0.0.0.0( 0)          0        LISTEN
lsh>
```

There are 3 TCP "LISTEN" state as shown above.

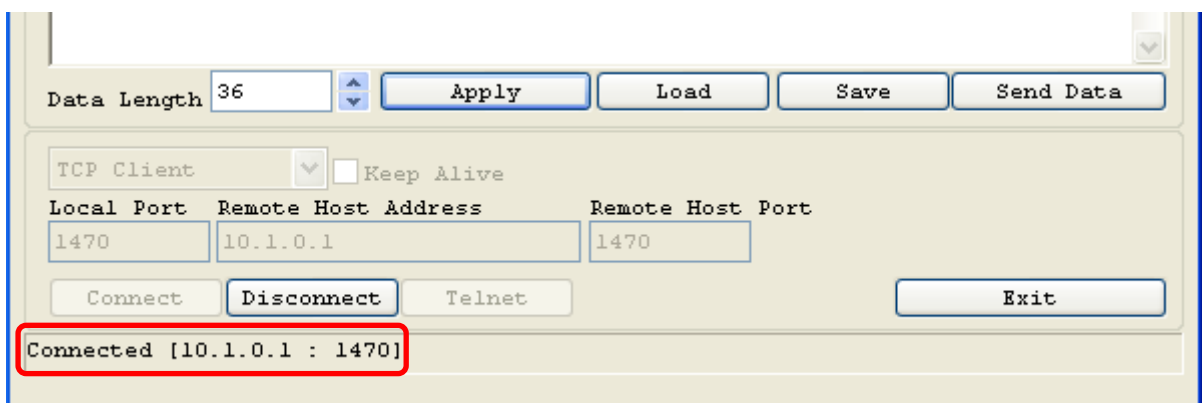
3 Example of use

3.1 Connecting to CSE-M73

Confirm "Multi-Monitoring" feature by using "ezTerm". "ezTerm" is the socket communication test program, which is supplied freely. It can be downloaded from served CD or our webpage.



Input [Remote Host Address] and [Remote Host Port] with [Local IP Address] and [Local Port] of CSE-M73. And click the [Connect] button as shown above. The below is the screenshot after TCP connection is set up.

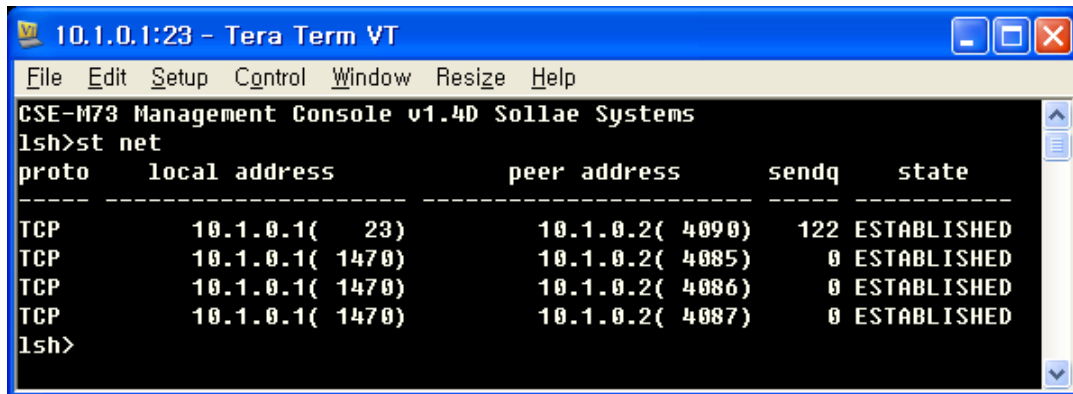


Run new ezTerm and do this process twice again.

3.2 Confirm connections

3.2.1 Confirm with telnet console

The below is result of sending "st net" command to CSE-M73's telnet console.



```

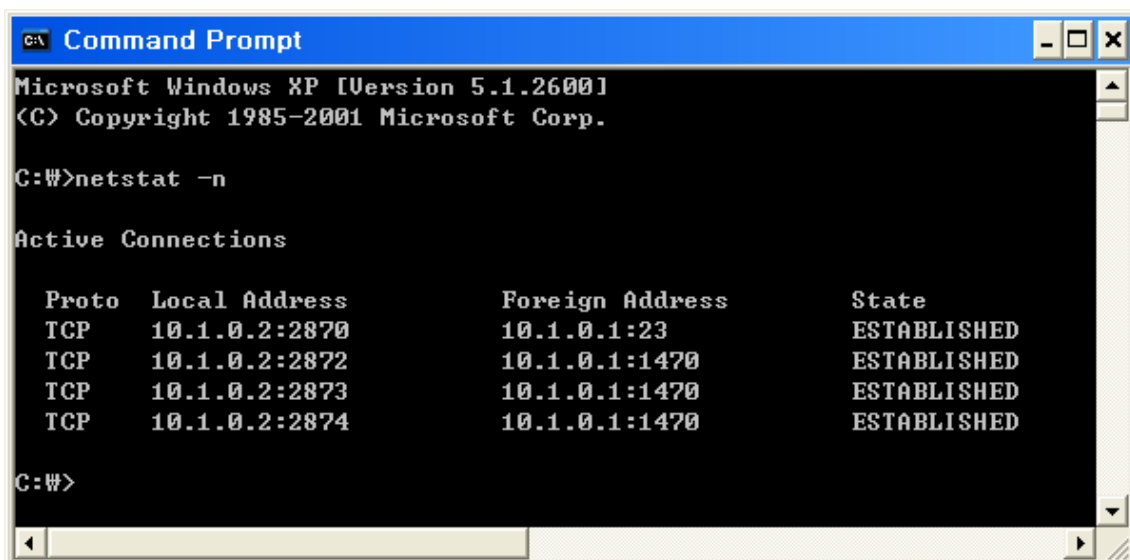
10.1.0.1:23 - Tera Term VT
File Edit Setup Control Window Resize Help
CSE-M73 Management Console v1.4D Sollae Systems
lsh>st net
proto      local address          peer address          sendq    state
-----
TCP        10.1.0.1( 23)         10.1.0.2( 4090)      122     ESTABLISHED
TCP        10.1.0.1( 1470)       10.1.0.2( 4085)      0       ESTABLISHED
TCP        10.1.0.1( 1470)       10.1.0.2( 4086)      0       ESTABLISHED
TCP        10.1.0.1( 1470)       10.1.0.2( 4087)      0       ESTABLISHED
lsh>

```

User can check 3 TCP connections like above screenshot. (TCP Port 1470)

3.2.2 Confirm with DOS command of MS Windows

User can use DOS command of MS Windows. The command is "netstat -n" and the result is like below.



```

Command Prompt
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\#>netstat -n

Active Connections

    Proto Local Address          Foreign Address        State
    TCP    10.1.0.2:2870         10.1.0.1:23           ESTABLISHED
    TCP    10.1.0.2:2872         10.1.0.1:1470        ESTABLISHED
    TCP    10.1.0.2:2873         10.1.0.1:1470        ESTABLISHED
    TCP    10.1.0.2:2874         10.1.0.1:1470        ESTABLISHED

C:\#>

```

3.3 Data flow

3.3.1 Hosts to CSE-M73

All data from connected hosts send only to user's serial devices. When there are 3 connections to CSE-M73 and incoming data from hosts to CSE-M73, CSE-M73 does not separate each data which is come from each host. So user's serial equipment should separate incoming data from CSE-M73.

3.3.2 CSE-M73 to hosts

All data from serial devices send all connected hosts. If the present connection number is 3 -for example connection A, B and C-, incoming serial data send to all hosts A, B and C.

4 Revision History

Date	Version	Comments	Author
Sep. 09. 2008	1.0	Initial Release	
Apr.29.2009	1.1	Correct some terms and picture	
Nov.08.2018	1.2	Add a note about the number of maximum connections	Roy LEE