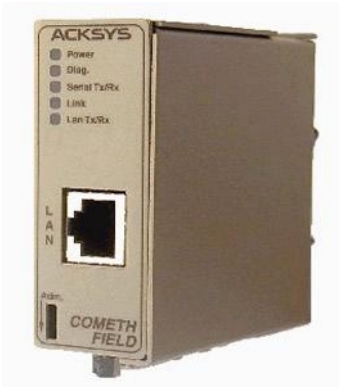







# TUNNEL UDP
# FOR COMETH RANGE
# USER GUIDE

# TUNNEL UDP USER GUIDE



ACKSYS
COMMUNICATIONS & SYSTEMS
3 & 5 rue du Stade
BP 4580
78302 POISSY CEDEX
FRANCE

Telephone: +33 (0)1 39 11 62 81
Fax: +33 (0)1 39 11 47 96
Web: www.acksys.fr
Hotline: support@acksys.fr
Sales: sales@acksys.fr

PAGE INTENTIONALLY LEFT BLANK

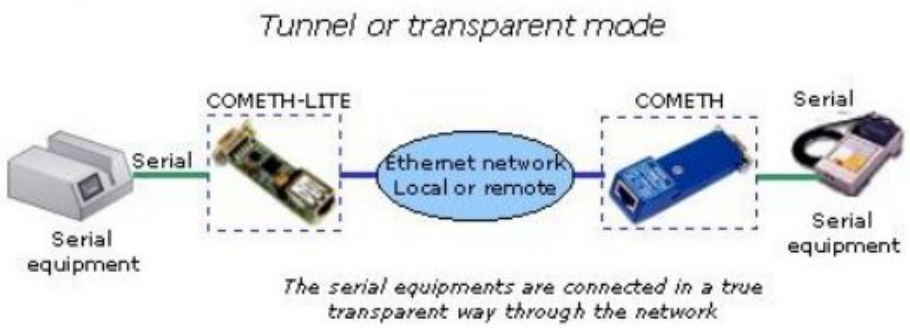
# TABLE OF CONTENTS

PAGE INTENTIONALLY LEFT BLANK

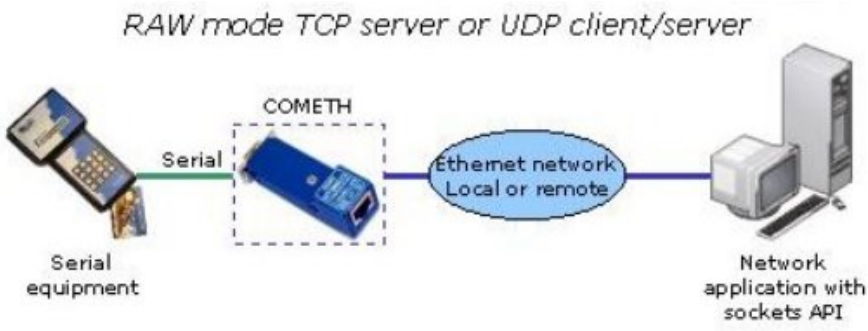
# I. INTRODUCTION

This software allows any product of the COMETH range to be used as a gateway between an UDP/IP network and an asynchronous serial interface.
This gateway can be used in two modes :

- tunnel mode : This mode enables two serial devices to establish a full serial link (data/control signals) through an IP network.
  Characters and states of the control signals (RTS, DTR, CTS, DCD, DSR) are encoded in the packet according to a specific protocol which guarantees the timing preservation between characters and signal transition events. Because of the specific protocol, two COMETH devices are necessary at each end. The packet is transmitted in an UDP datagram. Notice that UDP protocol (against TCP protocol) solves timing synchronization problems, but is not able to retransmit datagrams in case of error/loss.
  RTS/CTS or DTR/CTS can be used for hardware input/output flow control on the local serial link; in this case transition events are not transmitted in the UDP datagram.




- raw mode UDP client/server : Simple Tx/Rx gateway between UDP network and a serial network.
  RAW mode doesn't require two COMETH.
  RAW mode supports only Tx and Rx serial data transfer, control signals transition events are not transmitted.



PAGE INTENTIONALLY LEFT BLANK

# II. TUNNEL MODE

To select this mode, use COMETH administration mode (by running telnet or hyperterminal, see COMETH user's manual) and type the following command :

*set serial mode tunnelpp*

# III. RAW UDP CLIENT/SERVER

To select this mode, use COMETH administration mode (by running telnet or hyperterminal, see COMETH user's manual) and type the following command :

*set serial mode raw*

## III.1 Programming example for Windows

Source file and executable file are on the CD ROM supplied by ACKSYS.

```
/*********************************************************************/
/*    this program is an example about socket using under windows    */
/*    with MFC library provided by Microsoft.                        */
/*    To compile this program use command : "cl udp_loopback.cpp /MT   */
/*    with microsoft compiler.                                       */
/*    This example is provided by Acksys without without guarantee and */
/*    is not covered by Acksys quality system.                       */
/*********************************************************************/

#include <afxsock.h>          // MFC socket extensions
#include <conio.h>
#define MINTAMPON 13    // 9 meters + space + 'A' + CR + LF
#define MAXTAMPON 4095
#define TIME_DELTA      10
#define NB_FRM_AFF      10

#define UDP_PORT 2300 //Must match with the COMETH configuration

char initbuf[MAXTAMPON] = "123456789 "
      "ABCDEFGHIJKLMNOPQRSTUVWXYZ"
      "abcdefghijklmnopqrstuvwxyz Test en cours.<=>";
char sendbuf[MAXTAMPON];

void initsock(void)
{
// initialisations
      AfxWinInit(GetModuleHandle(NULL),NULL,"",0);

      WSADATA Wsadata;
      Int rc;
      If((rc=WSAStartup(0x202,&Wsadata))) {
            fprintf(stderr,"Cannot init WSAStartup, %d\n", rc);
            exit(1);
      }

      if(!AfxSocketInit()) {
            fprintf(stderr,"Cannot init AfxSocket, %d\n", GetLastError());
            exit(1);
      }
}
```

```
void main(int argc,char**argv)
{
      int Len = strlen(initbuf);
      ULONG nb = 0;

      initsock();
      CSocket *sock = new CSocket;
      unsigned int count=0, nc=0;
      unsigned int TotalCount = 0;

      if(argc == 2) {
            TotalCount = atoi(argv[1]);
            nb = TotalCount / Len;
            TotalCount -= nb * Len;
      }
      printf("this program sends all data received "
            "on udp port %d to the sender\n",UDP_PORT);
      printf("Len=%d, %d trames+%d\n",Len,nb,TotalCount);

      if(!sock->Create(UDP_PORT,SOCK_DGRAM,0)) {
            fprintf(stderr,"Err create %d\n",sock->GetLastError());
            exit(1);
      }

      setbuf(stdout,NULL);
      Cstring ClientIp;
      UINT ClientPort;

      for(;;)
      {
            nc = sock->ReceiveFrom(sendbuf,Len,ClientIp,ClientPort);
            sock->SendTo(sendbuf,nc,ClientPort,ClientIp);
            putchar('w');
      }
}
```

# IV. PARAMETER SETTINGS IN ADMINISTRATION MENU

## IV.1 General purpose commands

## IV.2 Setting or displaying the General Parameters

## IV.3 Setting or displaying the Network Parameters

## IV.4 Firmware selection

## IV.5 Setting or displaying groups of parameters

The commands involved in the five groups above are the same for all the firmwares that can be used on the COMETH. Please refer to the appropriate COMETH user manual where they are described.

Please note that the "set net reconnect" and "set net keepalive" commands, though available to all firmwares, does not apply to the TUNNEL firmware.

## IV.6 Setting Network Parameters specific to the TUNNEL firmware

| | |
|---|---|
| **set net tdgram** *nbyte* | *nbyte* is the minimum number of bytes (characters or signal transition events) required before the UDP datagram can be sent to the remote device. If the programmed number *nbyte* is not reached when the time out defined with command "set serial tbuf" expires, the datagram is sent anyway.<br>The maximum number of bytes in one datagram is fixed to 200. |
| **set net add rcv** *IP_address* | Add IP address of the remote receiver |
| **set net add snd** *IP_address* | Add IP address of the remote sender |
| **set net rmv rcv** *IP_address* | Remove remote receiver IP address |
| **set net rmv snd** *IP_address* | Remove remote sender IP address |

In point to point architecture, remote receiver and sender **must** have the same IP addresses.
IP address is represented in the so-called "decimal dotted notation" which consists of the decimal value of each of the four bytes, separated by dots.

## IV.7 Serial port parameters changes

**set serial interface** *mode option* mode : one of **rs232/rs422/4wires/rs485/2wires**
option : **master** or **slave** for rs422 / 4wires mode, **noecho** or **echo** for rs485 / 2wires mode

**PLEASE NOTE:**

- On some COMETH products, only is meaningful. Other choices will result in communication errors. See the serial port specifications of the appropriate COMETH user manual.
- Keywords “rs422” and “4wires” are synonyms. Their meaning is identical.
- Keywords “rs485” and “2wires” are synonyms. Their meaning is identical.

**rs232 :** setting for rs232 serial interface equipment
**rs422 master** or **4wires master :** setting for master equipment in multidrop, configuration or for both equipments in point to point configuration
**rs422 slave** or **4wires slave** : setting for slave in multidrop configuration.
**rs485 noecho** or **2wires noecho** : setting for all equipments in multidrop or point to point configuration
**rs485 echo** or **2wires echo** : setting for all equipments in multidrop or point to point configuration. In this mode, transmitted characters on RS485 line are echoed on Lan line.

**set serial dtr** *mode* DTR management : one of **flow/modem/high/low** or a combination of **dsr,cts,dcd,ring**.

**set serial rts** *mode* RTS management **:** one of **flow/modem/high/low** or a combination of **dsr,cts,dcd,ring**.

- **modem** : the signal acts as if connected to a modem (DTR the COMETH is on line, RTS the COMETH wants to send data).
- **flow** : the signal is used for input flow control.
- **high/low** : the signal permanently asserted/deasserted.
- **dsr** : the signal follows the remote DSR.
- **cts** : the signal follows the remote CTS.
- **dcd** : the signal follows the remote DCD.
- **ring** : the signal follows the remote RI.

**set serial dsr** *mode* local DSR management**:** one of **use, modem, ignore**
**set serial cts** *mode* local CTS management**:** one of **use, modem, ignore, flow**
**set serial dcd** *mode* local DCD management**:** one of **use, modem, ignore**
**set serial ring** *mode* local RING management**:** one of **use, modem, ignore**

- **use** : transmit signal state to remote device.
- **modem** : signal acts as if connected to a modem (CTS the modem allows the COMETH to send data, DSR the modem is on line, DCD the modem says that the data it sends to the COMETH is valid).
- **ignore** : the signal state is ignored.
- **flow** : the signal is used for hardware output flow control.

**set serial port** *nnnn* associated UDP data port. *nnnn* is **1** to **65534**

**set serial baudrate** *speed* any baud rate from 229 bauds to 230400 bauds

**set serial format** *nbits parity* **1** *nbits* is **7** or **8** bits, *parity* is one of **e, o, n, m, s** (meaning even, odd, none, mark or space), **1** is the number of stop bits. Only one stop bit is supported.

| | |
|---|---|
| **set serial xonxoff** *mode* | software flow control: *mode* is one of **use** or **ignore**. Mixed (software and hardware) flow control is allowed. |
| **set serial tdsr** *delay* | acceptable delay between DTR rise and corresponding DSR rise at the beginning of a data session, when DSR is in modem mode. DTR→DSR in tenth of second. **0** to **255**. |
| **set serial tbuf** *delay* | delay between char reception and ETH emission in ms. **0** to **255**. Use this to improve outgoing Ethernet buffering. |
| **set serial toff** *duration* | when **DTR** is in modem mode, and the TCP connection is closed or lost, DTR will stay low for at least *duration*, expressed in tenths of second. **0** to **255**. |
| **set serial mode** *mode* | one of **tunnelpp, raw**<br>▪ **tunnelpp** : point to point tunnel with UDP<br>▪ **raw** : allows data exchange with a UDP application. |
| **set serial stime** *delay* | Delay between UDP reception and serial emission in ms (0 to 255). Use this value to limit delay between characters in serial interface. The factory setting of 2 ms is suitable for most of the common applications. |

## IV.8 TUNNEL firmware parameters display

Displaying the configuration parameters is allowed if the **showperm** parameter is set to « allow ». If it is set to « deny », the configuration parameters can only be displayed by the administrator after logging in..

Some parameters can be displayed for your information but cannot be changed.

| | |
|---|---|
| **show serial port** | associated UDP data port. 1-65534 |
| **show serial mode** | type of usage : tunnelpp / raw |
| **show serial interface** | rs232 / 2wires noecho (rs485) / 2 wires echo (rs485) / 4wires master (rs422) / 4wires slave (rs422) |
| **show serial dtr** | DTR management mode: flow/modem/high/low/dsr/cts/dcd/ring |
| **show serial rts** | RTS management mode: flow/modem/high/low/dsr/cts/dcd/ring |
| **show serial dsr** | DSR management mode: use, modem, ignore |
| **show serial cts** | CTS management mode: use, modem, ignore, flow |
| **show serial dcd** | DCD management mode: use, modem, ignore |
| **show serial ring** | RING management mode: use, modem, ignore |
| **show serial baudrate** | 300 ... 230400 bps |
| **show serial format** | parity, bits per char, stop bits |
| **show serial xonxoff** | use of XON/XOFF flow control: use / ignore |
| **show serial txbufsz** | send buffer size |
| **show serial rxbufsz** | receive buffer size |
| **show serial tdsr** | allowed delay from DTR to DSR in 1/10 s |
| **show serial tbuf** | allowed delay from char reception to UDP emission in ms |
| **show serial toff** | duration of a low DTR indicating a disconnect request in 1/10 s |
| **show net list** | IP address used to exchange UDP datagrams |
| **show net tdgram** | minimum number of bytes in an UDP datagram |

## IV.9 Factory settings

| | |
|---|---|
| **prog enable** | SERVERCOM firmware located in segment /2 |
| **login** | root |
| **password** | root |
| **location** | unknown location |
| **showperm** | allowed |
| **netconfigperm** | allowed |
| | |
| **net ethernet** | device serial number written on the label |
| **net dhcp** | off |
| **net dhcp hname** | empty (not sent) |
| **net dhcp clientid** | empty (MAC address sent as string) |
| **net ip** | 192.168.1.253 |
| **net mask** | 255.255.255.0 |
| **net gateway** | 0.0.0.0 |
| **net configport** | 23 |
| **net txsize** | 576 |
| **net rxsize** | 576 |
| **net metric** | 10 |
| **net keepalive** | off |
| **net reconnect** | off |
| | |
| **serial port** | 2300 |
| **serial mode** | tunnelpp |
| **serial interface** | rs232 |
| **serial dtr** | dsr |
| **serial rts** | cts |
| **serial dsr** | ignore |
| **serial cts** | ignore |
| **serial dcd** | ignore |
| **serial ring** | ignore |
| **serial baudrate** | 9600 bauds |
| **serial format** | 8 bits, no parity, one stop bit |
| **serial xonxoff** | ignore |
| **serial txbufsz** | 1024 |
| **serial rxbufsz** | 1024 |
| **serial tdsr** | 5 |
| **serial tbuf** | 2 |
| **serial toff** | 5 |

# V. GETTING STARTED

First, you must read the main user manual of your product :
Cometh232UserGuide (DTUS033).pdf : for COMETH DONGLE
ComethfieldUserGuide (DTUS036).pdf : For COMETH FIELD
ComethembdUserGuide (DTUS035).pdf for COMETH EMBEDDED

Next, the "MUX/TUNNEL UDP firmware" must be enabled.
To enable a firmware, see documentation : download firmware user guide(DTUS040).pdf

# VI. TROUBLESHOOTING

See paragraph "*troubleshooting*" in the main manual of your product.

Check the IP address used to receive or send UDP datagrams. The command "*show net list*" displays these IP addresses.

# VII. SEE ALSO

For documentation download or firmware update, click here.
For COMETH firmware updating, see "Download firmware user guide" on CD.

# VIII. NOTES

## NOTES

# IX. DEFECT REPORT FORM

| | |
|---|---|
| Name | |
| Company | |
| Telephone | |
| Fax | |
| E-mail | |
| COMETH | |
| Operating system | |
| Driver version | |
| Type of computer | |

Description of the problem

.....

.....

.....

.....

.....

.....

.....

.....

ACKSYS
3 & 5 rue du Stade
BP 4580
78302 POISSY CEDEX
FRANCE

Telephone: +33 (0)1 39 11 62 81
Fax: +33 (0)1 39 11 47 96
Web: www.acksys.fr
Hotline: support@acksys.fr
Sales: sales@acksys.fr

PAGE INTENTIONALLY LEFT BLANK


3 & 5 rue du Stade
BP 4580
78302 POISSY CEDEX
FRANCE

Telephone: +33 (0)1 39 11 62 81
Fax: +33 (0)1 39 11 47 96
Web: www.acksys.fr
Hotline: support@acksys.fr
Sales: sales@acksys.fr