

# Generic User Protocol

[Supported device types and versions](#)  
[Communication line configuration](#)  
[Communication station configuration](#)  
[I/O tag configuration](#)  
[Literature](#)  
[Changes and modifications](#)  
[Document revisions](#)

## Supported device types and versions

Generic User Protocol is intended to support an application-level implementation of simple and lightweight communication protocols directly in the [D2000 Event](#) process via an ESL script or Java code. It supports several types of lines including line-redundant and system-redundant ones. Data read from the communication are published into input I/O tags ([IN](#)) without waiting for any confirmation from the ESL script's side, therefore it is recommended to implement data handling via [Server Event](#) using the action [ON CHANGE](#), eventually by a trigger event with a [request queue](#) configured, eventually by enabling multiple executions of the script (action [ENABLE](#)) so that all the published data is handled even under heavier load.

## Communication line configuration

Category of communication line:

- [Serial](#), [Serial Line Redundant](#), [Serial System&Line Redundant](#)
- [SerialOverUDP Device Redundant](#), [SerialOverUDP Line Redundant](#), [SerialOverUDP System&Line Redundant](#)
- [MOXA IP Serial Library](#)
- [RFC2217 Client](#)
- [TCP/IP-TCP](#), [TCP/IP-TCP Redundant](#): it is possible to enter several IP addresses/symbolic names separated by commas or semicolons. Note: if a [TCP/IP-TCP](#) or [TCP/IP-TCP Redundant](#) line has all stations set to StOFF, the TCP connection will be closed. Thus it is possible to control TCP communication from the ESL script using a [STSTAT](#) tell command.
- [File I/O](#): reading from a file is supported (line by line or the entire file at once according to the [File Read Mode](#) protocol parameter. As an "Input file" parameter, a specific file (e.g. *C:\temp\input.txt*) or a mask (e.g. *C:\temp\\*.txt*) can be specified. As an "Archive" parameter, the following can be specified:
  - value **#DELETE#** - the input file is deleted after reading the data
  - directory name - the input file is moved to the specified directory after reading the data
  - empty value - the input file is not manipulated after reading the data

For both the "Input file" and "Archive" parameters, the symbolic constant **#APPDIR#** can be used to indicate the application directory (e.g. *"#APPD IR#input.txt"*).

## Communication line protocol parameters

[Configuration line](#) dialog box - tab **Protocol parameters**.

They influence some of the optional protocol parameters. The following line parameters can be set:

Table 1

| Keyword | Full name  | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Unit | Default value |
|---------|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---------------|
| TS      | TCP Server | Activates server mode on the <a href="#">TCP/IP-TCP</a> line. In this mode, the D2000 KOM process listens to the client connection. After the client is connected, the D2000 KOM process communicates with it (i.e., it is a single-server implementation handling a single client). After the client is disconnected, the D2000 KOM process listens again. In server mode, the entered server name is interpreted as the name/IP address of the interface on which the D2000 KOM process listens. It is also possible to enter symbolic names * resp. <i>ALL</i> (listening on all interfaces for <a href="#">IPv4</a> protocol), or [*] resp. <i>[ALL]</i> (listening on all <a href="#">IPv6</a> interfaces). | -    | False         |

|     |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |          |              |
|-----|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|--------------|
| RT  | Read Wait Timeout  | Waiting between individual data readouts from the communication. If no data was received during this period and previously some data was read, it will be published as a value of input I/O tag <a href="#">IN</a> .<br>If some data was received during this period, it will be appended to a buffer, until a timeout occurs or the buffer becomes full (see a parameter <a href="#">Read Size</a> ). If a parameter <a href="#">Log Each Read</a> is set to True, data will be published immediately regardless of the value of the parameter <a href="#">Read Wait Timeout</a> . | sec. mss | 1.000        |
| CE  | Character encoding | The method for text encoding/decoding for writing/reading. Implemented are: <ul style="list-style-type: none"> <li>• UTF-8</li> <li>• ISO_8859_1</li> <li>• Windows_1250</li> <li>• Windows_1251</li> <li>• Windows_1252</li> <li>• KZ_1048</li> </ul> Note: ISO_8859_1 mode is suitable for the transmission of 8-bit ASCII characters and implementation of binary protocols.<br>Note: if invalid data is read (e.g. for UTF-8 encoding), the input I/O tag will be invalidated.                                                                                                  | -        | ISO_8859_1   |
| RS  | Read Size          | Maximum size (in bytes) of input data. Longer data will be published in several chunks.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | -        | 1024         |
| FRM | File Read Mode     | Method of reading data from a file: <ul style="list-style-type: none"> <li>• Read one row - values are read and published to the input I/O tag (IN) one row at a time</li> <li>• Read whole file - the whole file is loaded and published to the input I/O tag (IN) at once</li> </ul>                                                                                                                                                                                                                                                                                              | -        | Read one row |
| LE  | Log Each Read      | If this parameter is set to True, data will be published immediately regardless of the value of the parameter <a href="#">Read Wait Timeout</a> .                                                                                                                                                                                                                                                                                                                                                                                                                                   | -        | False        |
| LF  | Log Format         | Format of data traces in log files: "0 - Hexa log" or "1 - Text log".<br>Setting the correct format helps to make a communication log file more readable depending on whether the specific protocol is text-oriented or binary by dumping the data in text or hexadecimal format.                                                                                                                                                                                                                                                                                                   | -        | 0 - Hexa log |
| SL  | Single Log         | Setting this parameter to True will make all logs to be written to a single file on redundant lines.<br>Setting this parameter to False means that two log files will be created for the primary/secondary line ( <a href="#">Serial Line Redundant</a> , <a href="#">SerialOverUDP Line Redundant</a> , <a href="#">TCP/IP-TCP Redundant</a> ), or four log files will be created for the primary /secondary line of the A/B system ( <a href="#">Serial System&amp;Line Redundant</a> , <a href="#">SerialOverUDP System&amp;Line Redundant</a> ).                                | -        | False        |

## Communication station configuration

- Communication protocol Generic User.
- The station address is not configured; it is recommended to configure a single station per line, but multiple stations are supported too. In this case, when data is received from the communication, it will be published via input I/O tags [IN](#) on all configured stations. Likewise, it will be possible to use output I/O tags [OUT](#) on any configured station.

## I/O tag configuration

Possible value types of I/O tag: **TxtI**, **TxtO**.

Input I/O tags:

- The input I/O tag has an address **IN**.  
Note: on redundant lines an I/O tag with address **IN** receives values read from any line (primary/secondary), eventually from any system (A/B).
- on line-redundant lines ([Serial Line Redundant](#), [SerialOverUDP Line Redundant](#), [TCP/IP-TCP Redundant](#)) it is possible to configure I/O tags with addresses **IN\_A** and **IN\_B** to distinguish inputs from primary/secondary line
- on system-redundant lines ([Serial System&Line Redundant](#), [SerialOverUDP System&Line Redundant](#)) it is possible to configure I/O tags with addresses **IN\_A**, **IN\_B**, **IN\_C**, **IN\_D** to distinguish inputs from primary/secondary line of system A/B

Output I/O tags:

- The output I/O tag has an address **OUT**.  
Note: on redundant lines values written to an I/O tag with address **OUT** are written to both lines (primary/secondary), eventually to both systems (A/B).
- on line-redundant lines ([Serial Line Redundant](#), [SerialOverUDP Line Redundant](#), [TCP/IP-TCP Redundant](#)) it is possible to configure I/O tags with addresses **OUT\_A** and **OUT\_B** to write data to primary/secondary line only
- on system-redundant lines ([Serial System&Line Redundant](#), [SerialOverUDP System&Line Redundant](#)) it is possible to configure I/O tags with addresses **OUT\_A**, **OUT\_B**, **OUT\_C**, **OUT\_D** to write data to primary/secondary line of system A/B only

**Note:** it is possible to configure and use an I/O tag with the address **IN** and I/O tags **IN\_A**, **IN\_B**, **IN\_C**, **IN\_D** on a single station at the same time.  
In a similar way, it is possible to configure and use an I/O tag with the address **OUT** and I/O tags **OUT\_A**, **OUT\_B**, **OUT\_C**, **OUT\_D** on a single station at the same time.

## Literature

---



### Blog

You can read blogs about Generic User Protocol:

- [Communication - Generic User Protocol](#)
- [Communication with the control panel of DINI ARGEO DFW06](#)

## Changes and modifications

---

## Document revisions

---

- Ver. 1.0 - October 15, 2015 - Creating the document.
- Ver. 1.1 - December 12, 2021 - Implementation of *TCP Server* and *Character Encoding* parameters.



### Related pages:

[Communication protocols](#)