



Advanced TCP/IP Data Logger

Trust in Confidence!

PRINTED MANUAL

Advanced TCP/IP Data Logger

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1 Introduction

1.1 About Advanced TCP/IP Data Logger

Advanced TCP/IP Data Logger input TCP/IP data directly into file, Excel, Access, database or any Windows application. Advanced TCP/IP Data Logger provides real-time data collection from any device or instrument. Send and receive serial data across the Internet or network connection.

Advanced TCP/IP Data Logger captures serial data, custom tailors it to your needs, then extract bits of data from data packets and transfers the data to any Windows or DOS application - either by sending keystrokes to the application's window, by passing the data through DDE (Dynamic Data Exchange) conversations, ODBC, OLE.

Key features of Advanced TCP/IP Data Logger is:

- capability to log multiple ports at the same time.
- can work as a server or a client.
- variable data receive.
- received data output without any changes to a file.
- variable format file forming setting (on time, data, size and etc.).
- advanced data parsers that allows you to parse, filter and format your source data;
- data export to any ODBC-compatible database (MS SQL, Oracle, MS Access, MS Excel, dBase and others).
- Advanced TCP/IP Data Logger can run as DDE or OPC server and can export all received data.
- Advanced TCP/IP Data Logger can use direct connection (use OLE) to Microsoft Excel and write data directly to rows or columns.
- program messages logging.
- auto program restart in showed time.
- simple, menu-driven step by step set-up - programming is not required to configure the software to collect data.
- many plug-in modules that extending program features.
- works on all Windows versions 9x/Me/NT/2000/XP

Advanced TCP/IP Data Logger also transmits requests or commands over a network connection to control or query your instruments directly from Advanced TCP/IP Data Logger over ASCII or MODBUS protocol over TCP/IP.

Unlike most other serial logging applications, Advanced TCP/IP Data Logger runs as a service so that it starts as soon as the operating system starts and doesn't require a user to log in and run it. It will continue to run even as users logon and logoff the workstation.

It is extremely easy to use! The configuration process is fully menu driven and has complete, context sensitive, on-line help. you can easily customize all input to your exact specifications. Once you see how easy it is to use Advanced TCP/IP Data Logger, you will never again take data readings by hand!

Typical usage

A typical application for Advanced TCP/IP Data Logger is to log data from one or more Terminal Servers to disk. A Terminal Server is a device that allows RS232 or RS485 serial devices to be connected directly to an Ethernet network. Terminal Servers typically have an Ethernet connector

and one or more RS232 or RS485 ports and they use the TCP/IP network protocol by sending the data that is transmitted through the RS232 or RS485 serial port to a TCP/IP port. Each Terminal Server would have its own IP address and all serial data would be sent through a specific TCP/IP port number.

Another typical application is remote access to a RS232 or RS485 controlled technology. I/O controller is an ideal device if you need remote digital I/O signalizations (ethernet input, ethernet output), remote relay control, server accessible remote inputs together with a RS-232 or RS-485 bus for a bar code reader, display, etc..

Applications examples

- Remote control of technology over RS-232 and RS-485 bus;
- Remote control of displays and signalling;
- Remote reading of PIR sensors, door contacts and security systems;
- Remote relay control;
- Industrial I/O;
- Card readers, RFID readers;
- Sales machines;
- Security alarms;
- Attendance systems;
- UPS control and logging;
- Bar code readers.

Therefore you can connect all your remote serial devices to one industrial server and collect all data to one place!

Company home page: <http://www.aggsoft.com/>

Software home page: <http://www.aggsoft.com/tcpip-data-logger.htm>

1.2 Glossary

ASCII - An acronym for American Standard Code for Information Interchange. ASCII files are plain, unformatted text files that are understood by virtually any computer. Windows Notepad and virtually any word processor can read and create ASCII files. ASCII files usually have the extension .TXT (e. g., README.TXT).

Binary File - A file that contains data or program instructions written in ASCII and extended ASCII characters.

Bit - Binary digit in the binary numbering system. Its value can be 0 or 1. In an 8-bit character scheme, it takes 8 bits to make a byte (character) of data.

Bytes - A collection of eight bits that represent a character, letter or punctuation mark.

Cable - Transmission medium of copper wire or optical fiber wrapped in a protective cover.

Client/Server - A networking system in which one or more file servers (Server) provide services;

such as network management, application and centralized data storage for workstations (Clients).

DNS (Domain Name System) - A DNS server lets you locate computers on a network or the Internet (TCP/IP network) by domain name. The DNS server maintains a database of domain names (host names) and their corresponding IP addresses. PC aggsoft's IP address, 198.63.211.24, corresponds to the DNS name www.aggsoft.com.

Internet - A global network of networks used to exchange information using the TCP/IP protocol. It allows for electronic mail and the accessing and retrieval of information from remote sources.

IP, Internet Protocol - The Internet Protocol, usually referred to as the TCP/IP protocol stack, allows computers residing on different networks to connect across gateways on wide-area networks. Each node on an IP network is assigned an IP address, typically expressed as 'xx.xx.xx.xx'.

IP address (Internet Protocol address) - The address of a computer attached to a TCP/IP network. Every client and server station must have a unique IP address. Client workstations have either a permanent address or one that is dynamically assigned to them each dial-up session. IP addresses are written as four sets of numbers separated by periods; for example, 198.63.211.24.

LAN (Local Area Network) - A network connecting computers in a relatively small area such as a building.

NIC, Network Interface Card - A card containing the circuitry necessary to connect a computer to a particular network media. Typically, the NIC plugs into the computer's accessory bus, (PCI, USB, etc.) and provides a network connection such as 10baseFL (fiber ethernet), thin-net, AUI, etc.

PC - abbreviation for a Personal Computer.

Ports - A connection point for a cable.

Protocol - A formal description of a set of rules and conventions that govern how devices on a network exchange information.

TCP/IP, Transport Control Protocol / Internet Protocol - TCP and IP are communications protocols, that is, structured languages in which data is communicated between one process and another, and between one network and another. TCP/IP is implemented in a multi-level layered structure.

TCP/IP is the 'glue' that ties together the many heterogeneous networks that make up the Internet.

2 License, Registration and technical support

2.1 License

Copyright © 1999-2009 AGG Software.
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SOFTWARE LICENSE

Trial Limited Version

The trial limited version of this software may be used for evaluation purposes at the user's own risk for a trial period. At the end of the trial period, the user must either purchase a license to continue using the software, or remove it from his/her system.

The trial limited version may be freely distributed, provided the distribution package is not modified. No person or company may charge a fee for the distribution of Advanced TCP/IP Data Logger without written permission from the copyright holder.

Licensed Version

On payment of the appropriate license fee, the user is granted a non-exclusive license to use Advanced TCP/IP Data Logger on one computer (i.e. a single CPU), for any legal purpose, at a time. The registered software may not be rented or leased, but may be permanently transferred, if the person receiving it agrees to terms of this license. If the software is an update, the transfer must include the update and all previous versions.

Registered customer are entitled to free updates during one year from the date of purchase. It means that during one year you can download and install the latest registered versions of Advanced TCP/IP Data Logger from our site. If you don't want to purchase an updates, you can use the program forever; it will never expire, but you won't be able to use the latest version. If you purchased the software more than one year ago, you are no longer entitled to free upgrade and technical support; however, you can purchase an updates to the latest version at a special, greatly discounted price, and this updates will allow you to have free updates and technical support for another year. The type of update license must match the type of your existing license.

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Should any term of these terms and conditions be declared void or unenforceable by any court of competent jurisdiction, such declaration shall have no effect on the remaining terms hereof.

If you do not agree to these conditions you should not install this software.

2.2 Limitations

Program is distributed on shareware terms. This means limited and unavailable secondary program possibilities, which become valuable or available after program registration. To register the program read [here](#)⁵.

In trial version of our program are the following limits:

- Trial period is limited by 21 days. After that time program won't work until it is registered.
- Continuous program work time is limited. After set period a message will be displayed and program stops its work;
- All data export modules can handle first 100 records only;

2.3 How to register

The program is distributed on shareware terms. This signifies limited or unavailable many features of the program, getting of full value or available after program registration.

If you'd like to be a registered user, to get information about the release of new versions, to use technical support and, at last, to get access to disabled functions of the program, register your copy. For registration, please, read [license agreement](#)⁴.

If you want to buy a program through the Internet visit the [registration page](#) of our site. On this page you can get the newest information about the registration process, and also find an order link. After you've have the form of order registration. Enter your personal information and choose the most convenient payment method for you. Further, you'll get notification and follow the notes in it.

More information about services, registration documents, payment means you can get on our [registration page](#) of our site.

Registered users are entitled to FREE upgrades for the major version, they purchased. That means,

that in case you bought registration key for version 2.00, you will receive upgrades for versions 2.xx for FREE . If a new authorization code is required it will be issued upon request at no charge to users who have registered for the current major version.

2.4 Support

Technical questions	support@aggsoft.com
Common questions	info@aggsoft.com
Sales questions	sales@aggsoft.com

3 Installation

3.1 System requirements

One of the following operation systems are necessary to run the program:

- Windows 95 (needed to install the last comctrl.dll update, please, visit download section of our site);
- Windows 95 OSR2;
- Windows 98;
- Windows Me.

If you'll use our software on the following OS, then you need administrator privileges for registration and installation:

- Windows NT4 (SP4 and above).
- Windows 2000 Professional;
- Windows 2000 Server;
- Windows XP x86 and x64;
- Windows 2003 Server x86 and x64;
- Windows Vista (all editions) x86 and x64.

You'll also need installed Internet Explorer 5.0 or later to look help on the program. It is necessary to have at least one working network interface (card) in your PC.

3.2 Installation process

If any beta-version was installed on your computer, remove it.

Quit of the working Advanced TCP/IP Data Logger on installation time.

Run an installation file.

By default, Advanced TCP/IP Data Logger will be installed to the directory "/Programs Files/Advanced TCP/IP Data Logger" of your system disk, but you can change this path.

In the standard distributive of Advanced TCP/IP Data Logger are no additional modules files, which you can download from our [site](#).

4 Program use

4.1 Getting started

After you have successfully installed Advanced TCP/IP Data Logger, use the following simple steps to configure and run it.

Open the Advanced TCP/IP Data Logger program from the Start Menu.

At program run you get into the main program window (fig.1), main elements of which are the main menu, the data window, the program messages list and the status bar. In the data window will be viewed formatted data processig. In the messages list are logged information, warning and error messages. The status bar shows current state of the selected data source, interface error messages and a number of bytes processed. Through the main menu, placed above the data window, you can get access to [program settings](#) ⁹ ("Options/Program settings...") and from the menu "Commands" (fig.2) can open an current log-file or clean the data window.

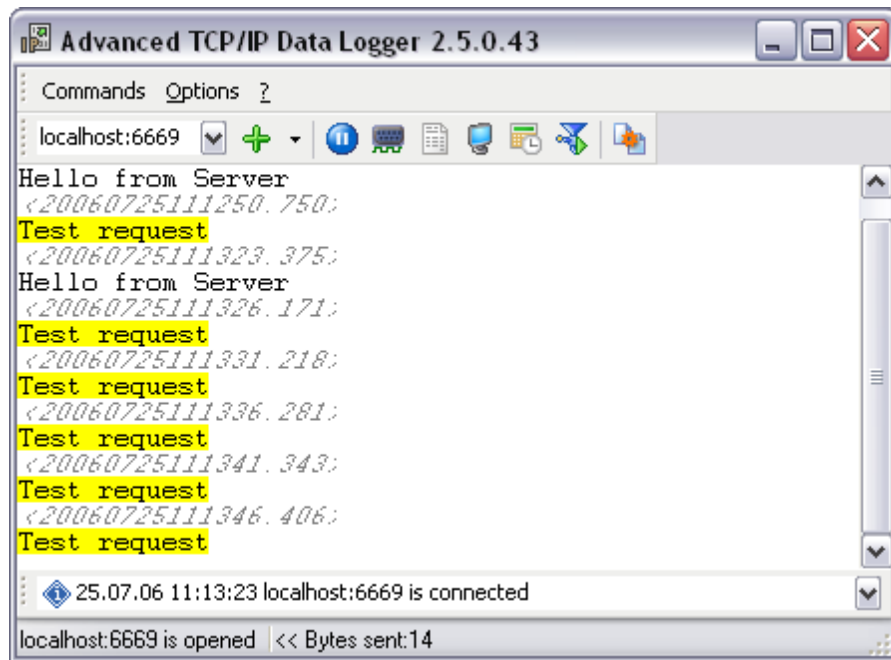


Fig.1 Main program window

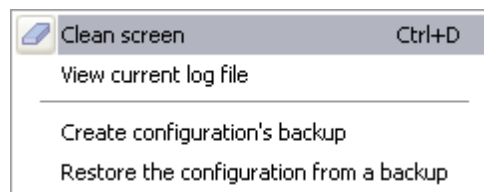


Fig.2. "File" menu item

By default (after installation), the program has not any data sources configured. If the list of data sources on the toolbar is empty, then the program will ask you to add new configuration. Otherwise, the program will fill in the list of data sources and try to start logging of data sources configured. Yes, of course, all your settings are being saved while exiting from the program and loaded while the program start.

Set-Up is as Easy as 1-2-3-4-5

Step 1. Select how you want the data collected.

The [Plug-in](#)^[22] button on toolbar in main window lets you send data to other Windows application programs as keystrokes, by Dynamic Data Exchange (DDE), OLE, ODBC data source or log serial data to a disk file in the background.

Step 2. Configure one or more data sources.

Click the "Add configuration" button on the toolbar with big green plus and choose [communication parameters](#)^[12] for your device. The "IP settings" tab of the "Configuration options" dialog lets you

configure your settings.

Step 3. Configure log file.

Select the "Log file" header in the configuration dialog window and enable logging for a necessary data direction.

Step 4. Define how you want the serial data to be [parsed and translated](#)^[22].

The "Plug-in" button on the toolbar in the main window or "Modules" tab in the dialog window lets you specify how to parse, filter and format your data to fit the exact format required by your application. It also lets you pre-define automatic output strings to be sent to an external device.

Step 5. Activate Advanced TCP/IP Data Logger and watch your data "pop" into your application!

Now, the program process and exports data from one or multiple data sources.

4.2 Introduction

Program can work with any kind of network interface cards (NIC). Before configuring our software, the following conditions should be executed:

- If your PC has more than one network interface card (NIC) then Advanced TCP/IP Data Logger will display a list of all the IP addresses for each NIC installed in your system so that you can select the IP Address that you want to use. In order for Advanced TCP/IP Data Logger to act as a server, the PC that it is running on must have at least one network interface card with an IP address assigned to it;
- If Advanced TCP/IP Data Logger will work as a server and your PC receives the IP address dynamically from a DHCP server, then you should ask your network administrator to assign a static IP address to your PC.

How to configure port parameters, you can read in the next chapter "[IP settings](#)^[12]".

Advanced TCP/IP Data Logger can save data to a log file(s) without any changes (i.e. create raw binary log files) or write to log files depending on the parser module selected. In the first case you can view the log file with any hex editor and use this data for further analysis and remaking. In the second case you can view data with any text editor. You can find more information about log files in the "[Log rotation](#)^[19]" chapter.

You can watch the data in the data window ([fig.1](#)^[7]). The data view is fully customizable. You can watch data in decimal, hexadecimal or your own format. How to customize data view you can read in the "[Data view](#)^[18]" chapter and how to customize program view you can read in the "[Window view](#)^[28]" chapter.

The data can be exported or transferred to one or more targets. Most simple way is to configure the log file rotation. But it is small part of all features of Advanced TCP/IP Data Logger. Advanced TCP/IP Data Logger has many [additional modules](#)^[22] (so-called plug-ins), that are appreciably extending

possibilities of the logging software. You can download and install any module supported. Most modules are free of charge for our customers. How to install and configure modules you can read in the "[Modules](#)" chapter.

The program and their plug-ins generates many messages and writes they to the list in the main window ([fig.1](#)) and a protocol file, that you can use for administration of the software. You can configure types of system messages. More information about it you can read in the "[Protocol and errors handling](#)" chapter.

The program can stop data process on some old OS, such as Windows 95 and Windows NT after few days of continuous work. You can prevent it with help of the "Auto restart" option ([fig.3](#)). Just specify the time of day, when the program should be being restarted.

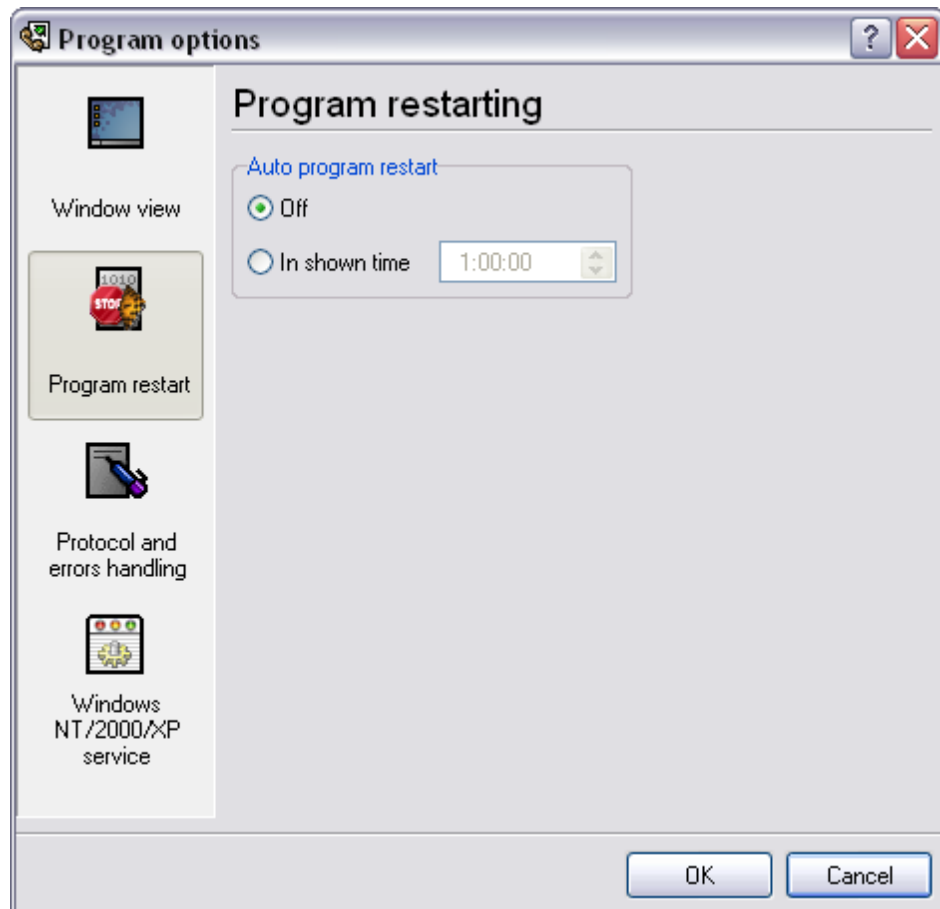


Fig.3 Program restart settings.

4.3 Data flow diagram

This diagram may help you to understand the flow of data within our software and a place of each module. All modules are described in following chapters.

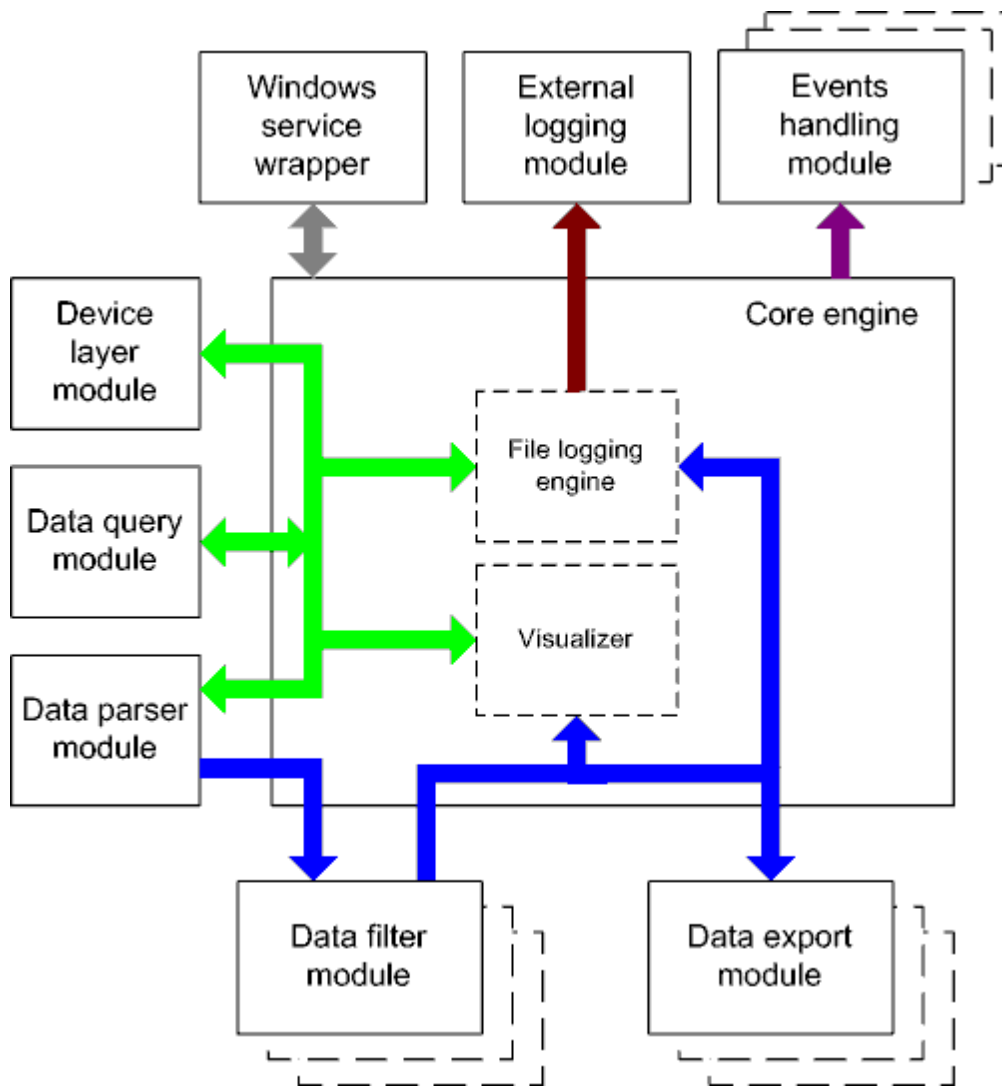


Fig.3 Data flow diagram

History:

Green - Binary flow of data (RAW, unformatted data).

Blue - Parsed data (formatted data). The data flow was been separated to data packets and variables. Each data packet can be interpreted as a row, and each variable can be interpreted as a column.

Wires with other colors mark other relations with unstructured data flow.

4.4 Configuration

4.4.1 TCP/IP settings

UDP vs. TCP

The most commonly used network protocols today are TCP (Transport Control Protocol) and UDP (User Datagram Protocol). TCP is a proven and reliable protocol, and probably the most widely implemented protocol in use on IP networks today. However, TCP has a lot of overhead and payload issues, and can sometimes be 'too-reliable' or robust for many applications. In fact, when used as transport, for many serial based applications TCP can actually hinder reliable communications. In contrast, UDP is a much simpler protocol, and is being used more frequently today - particularly in areas where bandwidth or throughput is constrained. An example is the predominant use of UDP for transport of wireless data applications.

UDP is first a connectionless protocol. Like TCP, UDP runs on top of IP networks. But unlike TCP, UDP does little to help with transport delivery or error recovery. Instead it offers a direct way to send and receive packets, letting the software application manage things like error recovery and data retransmission. Once primarily used for broadcasting small messages, UDP is now used for everything from browsers to Instant Messaging, Video, and Voice over IP applications.

While a powerful tool, the downside to using UDP is that there is not 'connection' report to know that you have end-to-end connectivity. This often makes detecting whether or not a packet is 'making it' from one place to another quite a hassle.

Client vs Server

Advanced TCP/IP Data Logger can be configured to log data from as many ports that you like simultaneously on a single PC. The program uses a multi configurations. Each configuration may contain different settings for each TCP/IP port. Each configuration has a set of TCP/IP parameters that are described below.

Each port configuration (i.e. TCP/IP connection) in Advanced TCP/IP Data Logger can act as:

1. **Client.** You will need to specify the remote host IP address and the port number for the TCP/IP server that you want to connect to. The IP address that you specify in Advanced TCP/IP Data Logger when configuring it as a client may also be either a URL or the name of a computer located on your network. For example, if you want to connect to a computer named "Plant1", you can simply enter "Plant1" for the IP address instead of the actual IP address. If you are configuring Advanced TCP/IP Data Logger as a client and your network is set up to assign IP addresses dynamically to each individual workstation, then you may need to use the name of the PC that you want to connect to instead of an actual IP address in order to guarantee a connection;
2. **Server.** In this mode you should specify the IP address of the local PC will be used and you only need to specify the port number that you would like to use. If your PC has more than one network interface card (NIC) then Advanced TCP/IP Data Logger will display a list of all the IP addresses for each NIC installed in your system so that you can select the IP Address that you want to use. In order for Advanced TCP/IP Data Logger to act as a server, the PC that it is running on must have at least one network interface card with an IP address assigned to it. In Microsoft Windows, the TCP/IP protocol can be configured to automatically obtain an IP address from a host computer. This means that your PC may not have an IP address until it is

connected to a network server or a host computer. You may need to contact your network administrator to assign an IP address to your PC if you wish to configure a TCP/IP server connection. This is done in the network settings for the TCP/IP protocol in your control panel.

After you enter the parameters that you would like to use, you must click the "OK" button to establish a connection between Advanced TCP/IP Data Logger and the TCP/IP port. If the current port configuration is set up as a client, it will immediately try to establish a connection to the specified remote server. If the server is not available, Advanced TCP/IP Data Logger will continually try to establish the connection until it is successful. If the port configuration is set up as a server, it will listen the specified port until a client establishes a connection to it.

If one or more port are configured already, then Advanced TCP/IP Data Logger is opening these ports and starting logging. If the port is opened successful, then the status bar in the main window displays a status of this port (fig.1⁷). But, before you should configure port parameters that are described below.

You can create the new configuration by clicking the "Plus" button in the main window (fig.1⁷) or through the "Options" menu. After you clicked the "Plus" button, the dialog window will be opened (fig.5). The dialog window contains few sections with parameters. The "IP settings" section is described in this chapter.

To log data from more than one TCP/IP connection you would create and configure multiple port configurations. You can manage the configuration created with a drop down menu near the "Plus" button (fig.4).

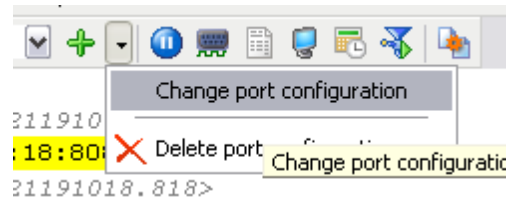


Fig.4 Access to the port configuration

The "IP settings" tab contains indispensable settings of any TCP/IP port: IP address and port.

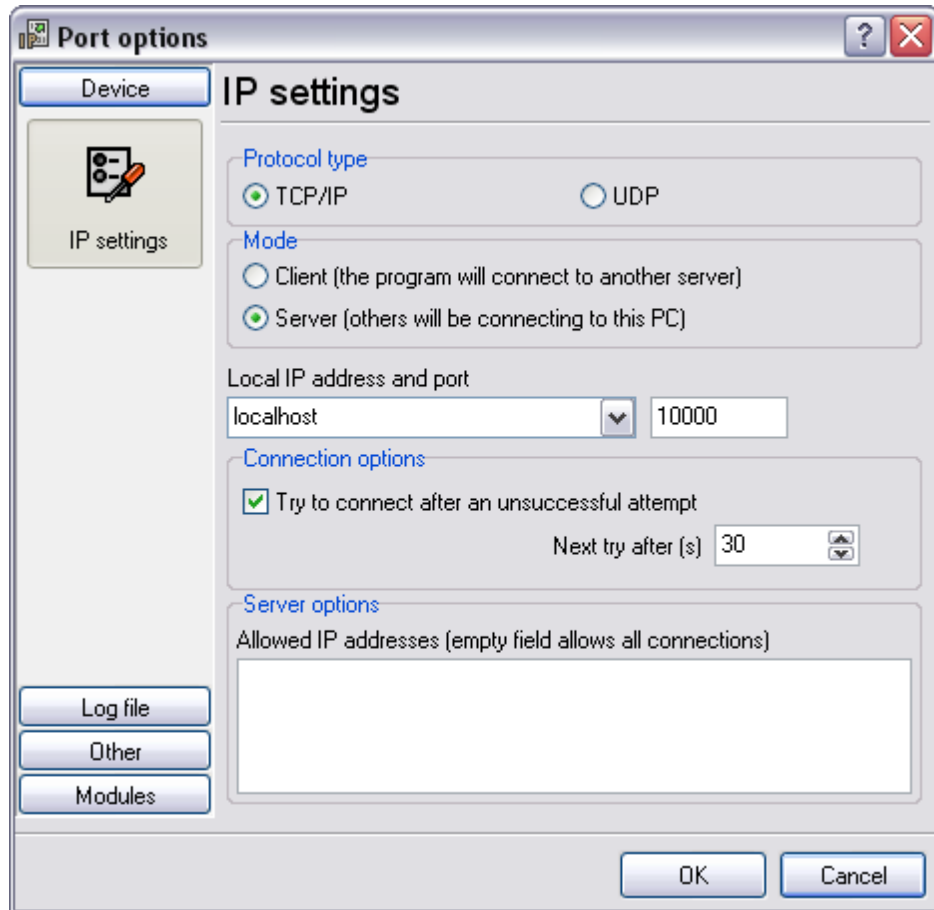


Fig.5 TCP/IP parameters.

Port

In addition to IP address, you should specify how to connect to a remote machine. Our software can be thought of as a trunk line with thousands of individual lines (the ports) which are used to connect machines. Some ports are considered well-known ports. For example, the port typically used for network mail systems (SMTP) is port 25, the telnet port is port 23, the network news server port (NNTP) is typically port 119, and so on. To see a list of well-known ports, inspect the SERVICES file in the Windows directory (for Windows NT it is in the WINNT\SYSTEM32\DRIVERS\ETC directory). The SERVICES file is a text file used by Advanced TCP/IP Data Logger to perform port lookups (which return the service name for the specified port) and port name lookups (which return the port number for the specified service name). You can open this file in any text editor to see a list of port numbers and their corresponding service names. While these well-known ports are not set in stone, they are traditional and their use should be reserved for the service which they represent. When writing network applications, you should select a port number that is not likely to be duplicated by other applications on your network. In most cases you can choose a port number other than any of the well-known port numbers.

The IP address and port number are used in combination to create a socket. A socket is first created and then is used to establish connection between two computers. How the socket is used depends on whether the application is a client or a server. If an application is a server, it creates the socket, opens it, and then listens on that socket for computers trying to establish a connection. At this point the server is in a polling loop listening and waiting for a possible connection. A client

application, on the other hand, creates a socket using the IP address of a particular server and the port number that the server is known to be listening on. The client then uses the socket to attempt to connect to the server. When the server hears the connection attempt, it wakes up and decides whether or not to accept the connection. Usually this is done by examining the IP address of the client and comparing it to a list of known IP addresses (some servers don't discriminate and accept all connections). If the connection is accepted, the client and server begin communicating and data is transmitted.

Connection options

If the remote server (in the client mode) or local network interface (in the server mode) is not available and the "**Try to connect after unsuccessful attempt**" options is True, then Advanced TCP/IP Data Logger will continually try to establish the connection until it is successful. The program will try to establish the connection each N seconds that you can specify in the "**Next try after XXX seconds**" field.

Allowed IP addresses

This option is active in the server mode and allows you to enter one or more IP addresses that have access to the server. IP addresses that are not listed in this fields will be refused by the server. This options is very useful if you transfer your data over Internet connection or your server PC is connected to a big corporate network. You can specify multiple addresses - one per row. If you'll not specify any address here, then Advanced TCP/IP Data Logger will accept connections from all IP addresses.

Firewall settings

After you install Microsoft Windows XP Service Pack 2 (SP2), our Advanced TCP/IP Data Logger may not seem to work. Windows Firewall, enabled by default, blocks unsolicited access to your computer via the network and may be blocking the normal operation of the program. To provide increased security to Windows XP users, Windows Firewall blocks unsolicited connections to your computer. When Windows Firewall detects incoming network traffic that it does not recognize, a Security Alert dialog box appears. The security alert dialog box looks like this:



Fig.6 Firewall alert.

The dialog box includes the following buttons:

- Unblock this program;
- Keep Blocking this program;
- Keep blocking this program, but Ask Me Later.

In order for our program to function properly, you must unblock the program by clicking the Unblock button. Unblocking allows Windows XP SP2 to allow the program to continue to work by adding it as an exception to your Windows Firewall configuration. Exceptions are specific programs and processes that you allow to bypass the firewall. After you add a program as an exception, you no longer receive the security alert. If you choose to continue blocking the program certain functions will be disabled.

Note: If you are using another firewall software, then please, refer to a firewall manual for corresponding settings.

Limitations

The specific limit of connections is dependent on how much physical memory your server has, and how busy the connections are:

The Memory Factor: According to Microsoft, the WinNT and successor kernels allocate sockets out of the non-paged memory pool. (That is, memory that cannot be swapped to the page file by the virtual memory subsystem.) The size of this pool is necessarily fixed, and is dependent on the amount of physical memory in the system. On Intel x86 machines, the non-paged memory pool stops growing at 1/8 the size of physical memory, with a hard maximum of 128 megabytes for Windows NT 4.0, and 256 megabytes for Windows 2000. Thus for NT 4, the size of the non-paged pool stops increasing once the machine has 1 GB of physical memory. On Win2K, you hit the wall at 2 GB.

The "Busy-ness" Factor: The amount of data associated with each socket varies depending on how that socket's used, but the minimum size is around 2 KB. Overlapped I/O buffers also eat into the

non-paged pool, in blocks of 4 KB. (4 KB is the x86's memory management unit's page size.) Thus a simplistic application that's regularly sending and receiving on a socket will tie up at least 10 KB of non-pageable memory.

The Win32 event mechanism (e.g. `WaitForMultipleObjects()`) can only wait on 64 event objects at a time. Winsock 2 provides the `WSAEventSelect()` function which lets you use Win32's event mechanism to wait for events on sockets. Because it uses Win32's event mechanism, you can only wait for events on 64 sockets at a time. If you want to wait on more than 64 Winsock event objects at a time, you need to use multiple threads, each waiting on no more than 64 of the sockets.

If you have more than 64 connection at a time, then we recommend to create multiple configuration in our software (the green plus button). Each configuration will use different port number and will run in a different thread. This change will allow to decrease an influence of Windows limitations.

Keep alive

A TCP keep-alive packet is a short packet which is sent periodically by the OS to keep the connection alive. The connection stay alive because those packets and their replies generate small traffic on the connection when the application is idle.

Keep-alives can be used to verify that the computer at the remote end of a connection is still available.

It is simply an ACK with the sequence number set to one less than the current sequence number for the connection. A host receiving one of these ACKs responds with an ACK for the current sequence number.

TCP keep-alives can be sent once every `KeepAliveTime` (defaults to 7,200,000 milliseconds or two hours) if no other data or higher-level keep-alives have been carried over the TCP connection. If there is no response to a keep-alive, it is repeated once every `KeepAliveInterval` seconds. `KeepAliveInterval` defaults to 1 second. Some (buggy) routers may not handle keep-alive packets properly.

Our software supports three modes of keep alive:

1. **Off** - the program doesn't use keep alive at all. You can disable keep alive if your network is very stable or your routers doesn't support it.

2. **System** - the program will use keep alive, but use system values of `KeepAliveTime` and `KeepAliveInterval`. These values are stored in the following registry branch:

```
[HKEY_LOCAL_MACHINE\System\CurrentControlSet\Services\Tcpip\Parameters]
```

```
KeepAliveTime (32-bit number) = milliseconds
```

```
KeepAliveInterval (32-bit number) = milliseconds
```

3. **Custom** - the program will use keep alive, but you can specify your values of `KeepAliveTime` and `KeepAliveInterval`, that are more applicable for your network and system. **Note:** in our software you should define these values in seconds.

4.4.2 Data view change

The data in the main window (fig.1⁷) can be displayed in two modes (fig.7):

1. **The data can be displayed before processing.** Before processing the data I fully comply with that has been read.
2. **The data can be displayed after processing.** After processing the data can be modified depending on the parser.

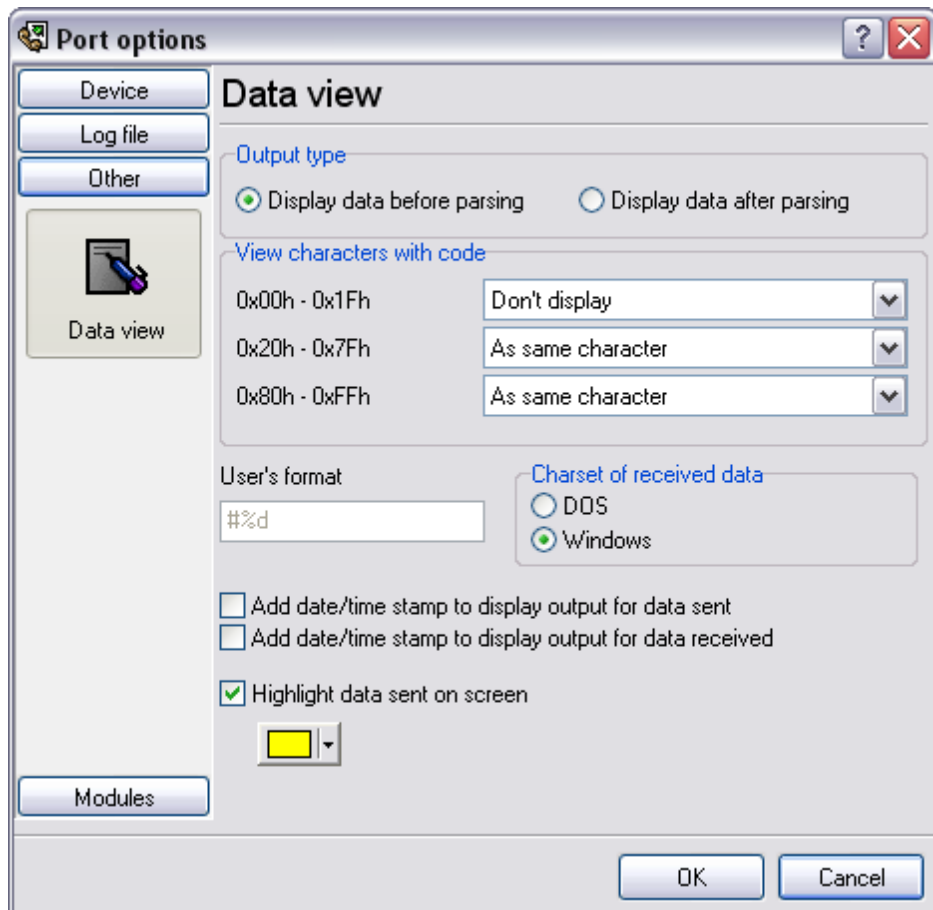


Fig.7. Data view

Data view settings, that can be configured on the "Data view" tab:

1. **View characters with code** - the program can interpret and decode bytes as characters. You can select decoding mode for each characters range. If the range doesn't have the corresponding character, that's why these data can be displayed only in hexadecimal and decimal code.
2. You can set up data byte display **users format**. The directive %d shows to display an decimal code, the directive %x - hex code. You can set any framing characters before/after the user format.
3. **Highlight data sent on screen** - string with sent data will be highlighted by the set color.
4. You can select add **date/time stamp** to display output for data.

4.4.3 Log files

4.4.3.1 Log rotation

The main function of Advanced TCP/IP Data Logger is logging data to a file (so-called, log file). The "Log rotation" tab has a rich set of options for it. (fig.8).



Fig.8. Log-file forming modes.

First of all, select log file what you can configure:

- **Log file for data received** - all data received will be saved here.
- **Log file for data sent** - all data sent will be saved here. If you want to save data to the same file, as data received, then select the "Log file rotation for data sent" from the list and enable two options: "Create log files on disk" and "Write to log for data received". Yes, of course, you should configure a log rotation for data received before.

later, set the "Create log file on disk" option to checked state. Then you can set path to folder, where files will be created with the help of dialog window, which will be showed up after clicking a button with picture of opening folder. You should select a necessary folder in the dialog window and click the "OK" button.

Note: The program can work with network paths too, but in this mode, the program will increase data flow over a network and can be failed with exceptional errors.

A log file name can be stamped with date and time. In this case a new log file is created periodically. The time stamp format depends on the selected period. For instance, if the "**File name prefix**" field is set to "sample", the "**File extension**" field to "log" and the "**File name format**" option is "Daily", then each log file created will have the format "sampleYYYYMMDD.log". On March 21st, 2003, the log file will be "sample20030321.log". Please, note, that the final extension (after the final period), remains at the end of the file name.

Log rotation mode is defined by the following key parameters:

- **File name prefix** - text string, which will be added at file name beginning;
- **File name extension** - text string, which will be a file extension (characters after dot);
- **Log file limit size** - the "Limit size" field specify the maximum size in kilobytes of any log file. If you'll specify zero size, then the file size will not limited. Otherwise, if the log file size will exceed the limit specified, then the log file content will be deleted and file filling will start from beginning.

If the program works continuous for a long time, it is possible that the log file will have large size and this file will be inconvenient for looking and analysing. For this there is the possibility to create files in dependence with the time on PC. You can select one variant predefined or set up new one:

- **Daily** - file will be created with name containing prefix, and date in format DDMMYYYY, where DD is two-digit day sign, MM is two-digit month sign and YYYY is four digits of the current year. The file name extension will be added at the end of file;
- **Monthly** - file will be created with name containing prefix, and date in MMYYYY format. The file name extension will be added at the end of file;
- **Each data packet in different file** - in this mode the program splits data flow to a different file. In this mode you should configure the parser or the program will split a data by timeout about 300 ms.
- **Don't create new file** - in this mode the program will write all data to one file. It is recommended for a small data flow. Otherwise your log file will be too big and a performance of the program will fall down;
- **User's format** - file will be created with name containing prefix and date in showed by you format (for example, DDMMYYYY). The file name extension will be added at the end of file. The file may not contain format signs, then file name will be constant. You should not use characters, that the OS doesn't allows in file name, such as "/", "\", "*", "?" and some others.

Date and time formatting codes:

d - day, not adding null(1-31).
 dd - day ,adding null(01-31).
 ddd - day of the week in text form(Mon-Sat) according to standard, set on this computer.
 dddd - day of the week in full text form(Monday-Saturday) according to standard, set on this computer.
 m - month, not adding null(1-12).
 mm - month, adding null (01-12).
 mmm - month in text form(Jan-Dec) according to standard, set on this computer.
 mmmm - month in full text form (January- December) according to standard, set on this computer.
 yy - year in the form of two last digits(00-99)
 yyyy - year in the form of four last digits (0000-9999).
 h - hours, not adding null (0-23).
 hh - hours, adding null (00-23).

- n - minutes, not adding null (0-59)
- nn - minutes, adding null (00-59).
- s - seconds, not adding null (0-59).
- ss - seconds, adding null (00-59).

Example: you want to create log file every hour. It is desired that file name starts from "sample_log" and the file extension "txt".

Answer: set file prefix = sample_log_, file extension= txt (without dot!). In file name format show HHDDMMYYYY. Now file will be created every hour. Naturally, you can set any formatting characters combination, described higher.

If you want to access to a log file while the program work, then you should configure [access mode settings](#)^[21] for the log file in the next chapter.

4.4.3.2 Log file access

During work can be such situations, when it is necessary to get access to a file with *current* data (current log file) from other applications (for example, for data processing). But while you are accessing the current log file Advanced TCP/IP Data Logger can't write data to a log file and all data at this moment will be lost. We recommend to use a temporary file for data storage. It is most safe way. (fig.9).

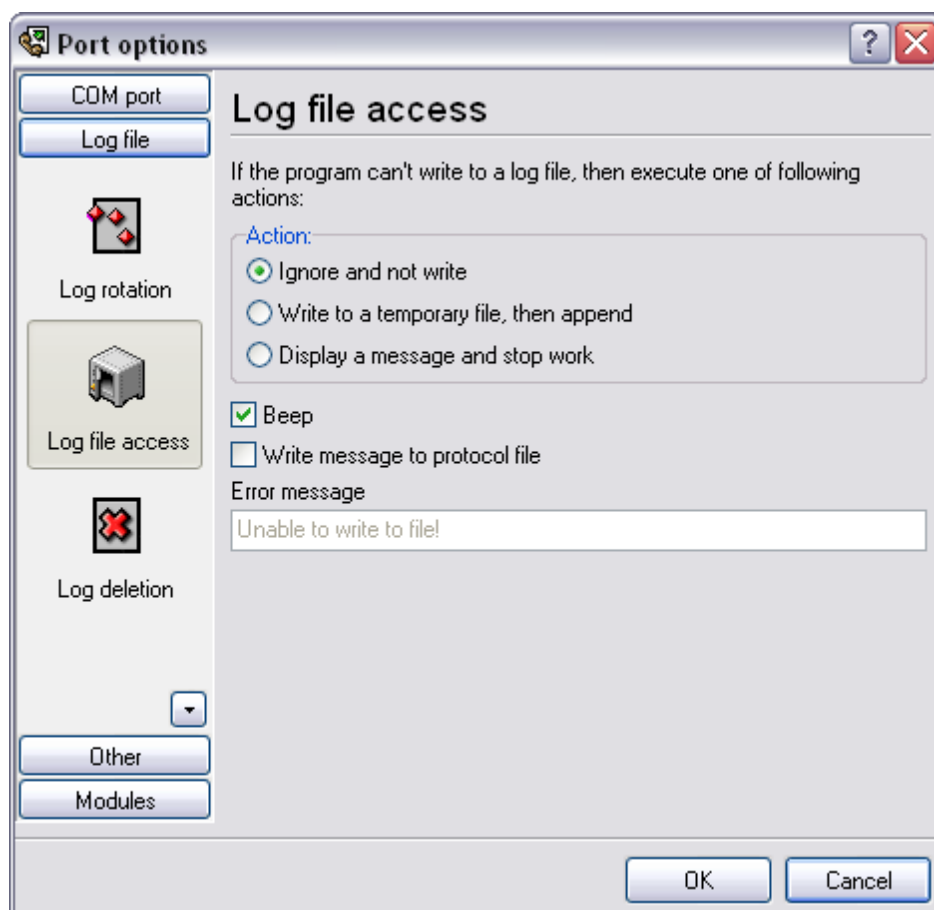


Fig.9. File access mode.

You can select one from following variants:

- **Ignore and not write** - with this mode, the data will be **lost**;
- **Write to a temporary file, then append** - a temporary file will be created, to which writing will be done. After access to current file will be got, temporary file content will be added to the end of main file. But mind that if file is created in dependence of time, there can be a situation when at temporary file forming name of the main file will be changed. Then temporary file will be added to the end of newly created file.
- **Display a message and stop work** - data will be lost until dialog window is closed.

You can set up your message text, which will be displayed at writing error to data file. The sound signal can be on for an additional indication. You can also enable writing a message to a protocol file.

4.4.3.3 Log deletion

The deletion of files will help you to avoid stuffing your hard disk with needless information. Log files can be deleted either depending on the time of storing or when the maximal number of files is exceeded.

When deleting files by the time of their storage, the files that were modified last time before the specified period are deleted.

When controlling the number of files, the files with the oldest modification dates are deleted first.

You can select both variants of file deletion. In that case files will be deleted when either of the conditions is true.

4.4.4 Modules

4.4.4.1 Introduction & setup

To extend program functionality we implemented plug-ins modules. Module structure lets reduce your program size and purchase costs (you pay only functionality, which you need), to low down program distributive download time, your computer processor load and reduce disk space.

Advanced TCP/IP Data Logger supports few types of modules (fig.10-12):

- **Data query** - transmits queries or commands out the data source to control or query your instruments directly;
- **Data parser** - data parser that allows you to parse, filter and format more complex data from more sophisticated devices. Some of the advanced features of the parser are the ability to work with raw binary or hex data;
- **Data filter** - data filters allow you to filter your data and modify values of parser variables;
- **Data export** (fig.11) - Advanced TCP/IP Data Logger has many modules for passing serial data directly to other applications, such as as keystrokes where incoming data is passed to other programs as a sequence of keys, as DDE Server that passes data to other programs

- using Dynamic Data Exchange, ODBC for exporting data to a database and many others;
- **Events handling** (fig.12) - an external plug-ins used to handle events generated by the Advanced TCP/IP Data Logger software. Once an event occurs (for example: "Data source is opened" or "Configuration changed"), the plug-in creates a text message using the specified template and sends a notification, do some actions, such as execute programs, scripts and etc. The form of the notification or actions depends on the plug-in settings.

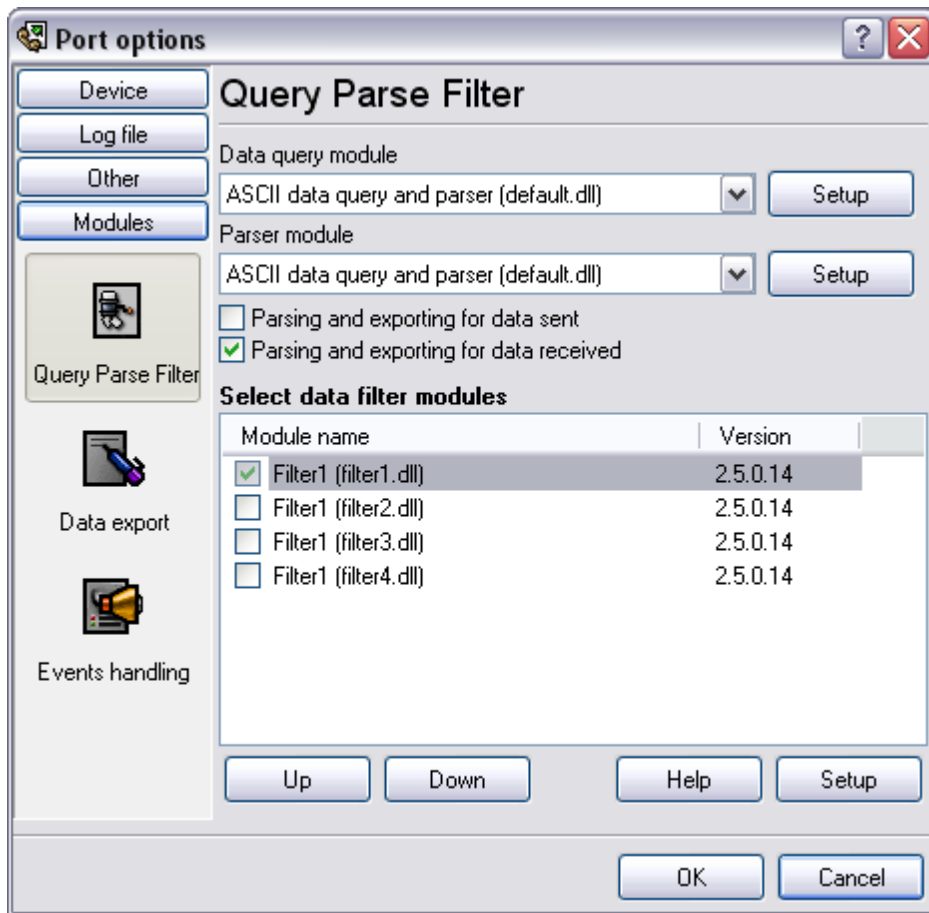


Fig.10 Data query, parsing and filter modules

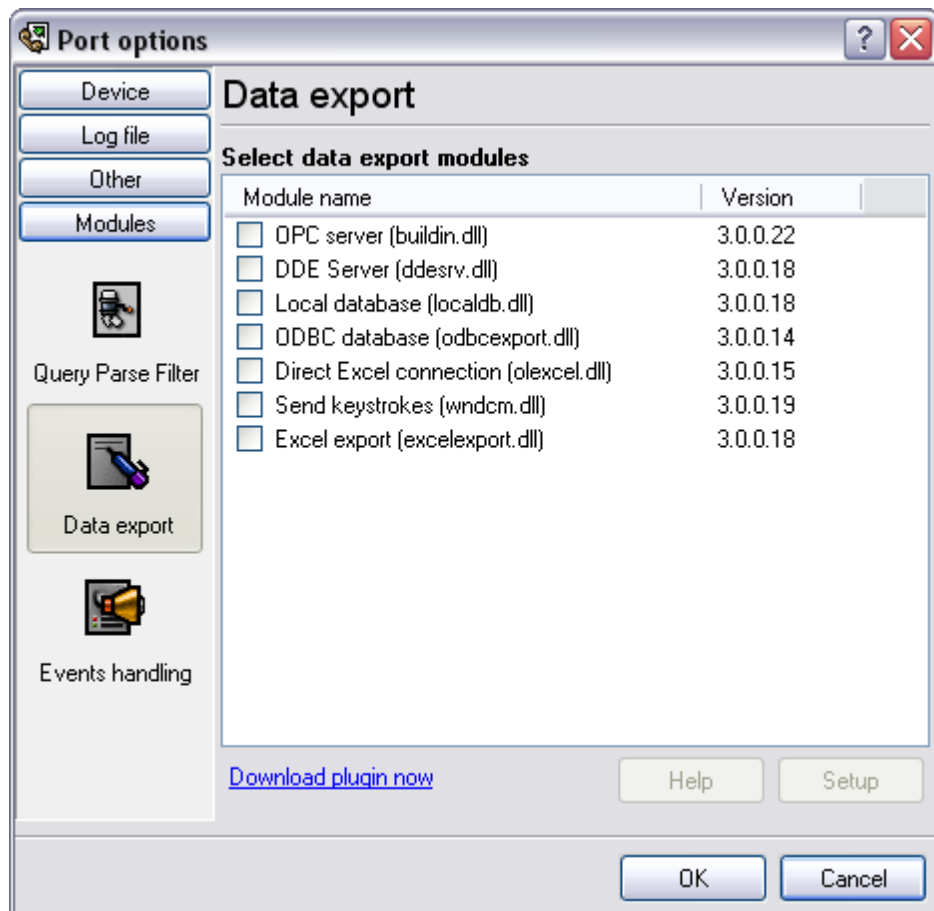


Fig.11 Data export modules

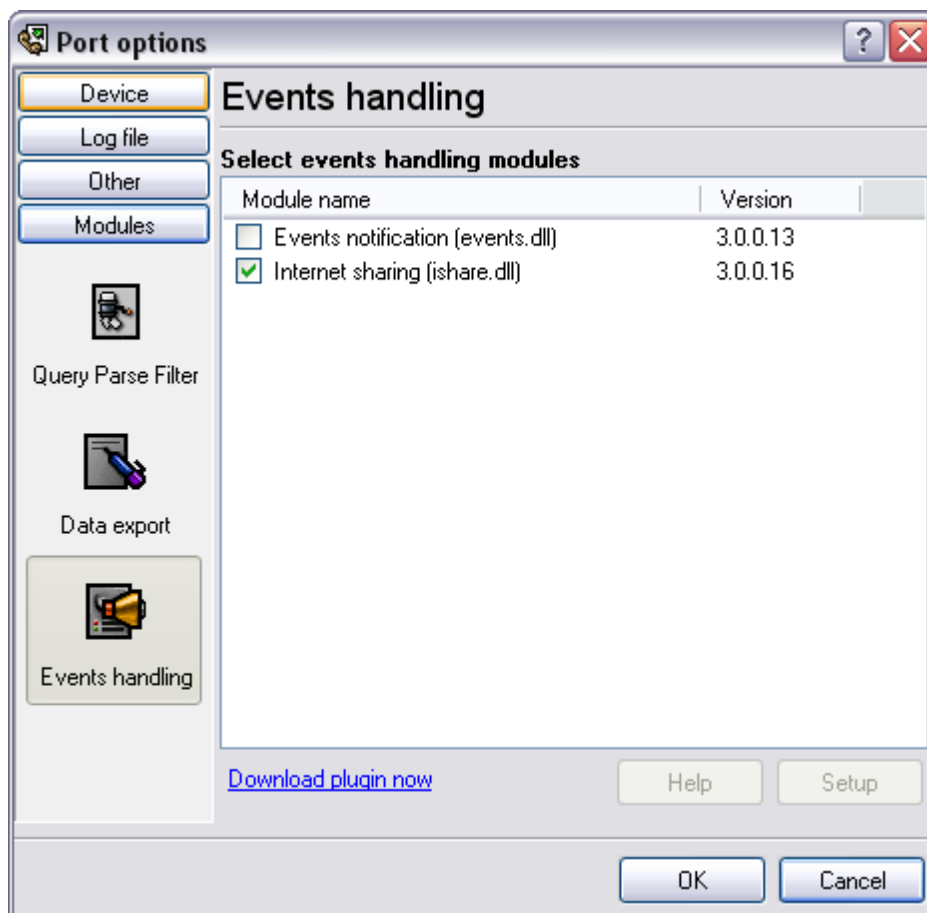


Fig.12 Events handling modules

You can parse and export data sent and received (Fig.10). By default, only data received will be parsed.

Installation

You can easily install a new module. usually, you should start the installation file and click the "Next" button for few times. The installation wizard will detect a place of your Advanced TCP/IP Data Logger software and place a plug-in module and all distributive files to the "Plugins" folder, which is in the program folder (by default X:\Program Files\Advanced TCP/IP Data Logger\Plugins).

After program restart a module will be loaded and initialized. If module is supported with our software, its short description you will see in modules list (Fig.10-12). Most modules require additional settings. If you want to configure the plug-in module, simply click the "Setup" button near it. If you selected the module and the "Setup" button is not active, then module doesn't have additional settings and can work without additional settings. Please, read users manual of a corresponding plug-in for additional information.

Configuration steps

1. Select and configure a query module. You may use a module of this type if you need to send some data to your device (for example, initialization strings or request strings).

2. Select and configure a parser module. This step is necessary, because filter and export modules can use parsed data only. If you didn't select the parser module, then you can't configure the data filter and data export modules.
3. Activate and configure data export modules. You can select one or more modules simultaneously. The program will use selected modules simultaneously. Please, note, the program can't use the data export module, if you didn't configure the parser module.
4. Activate and configure event modules. You can select one or more modules simultaneously.

4.4.4.2 OPC server

Since the version 2.1.1 Advanced TCP/IP Data Logger has an internal OPC server. It means, that any OPC compatible client application can get data from Advanced TCP/IP Data Logger without any additional software. For connecting to the OPC server our OPC server has an unique attributes (Fig.1). Before using the OPC server on your PC you should download and install the OPC Core Components Redistributable from www.opcfoundation.org (registration required).

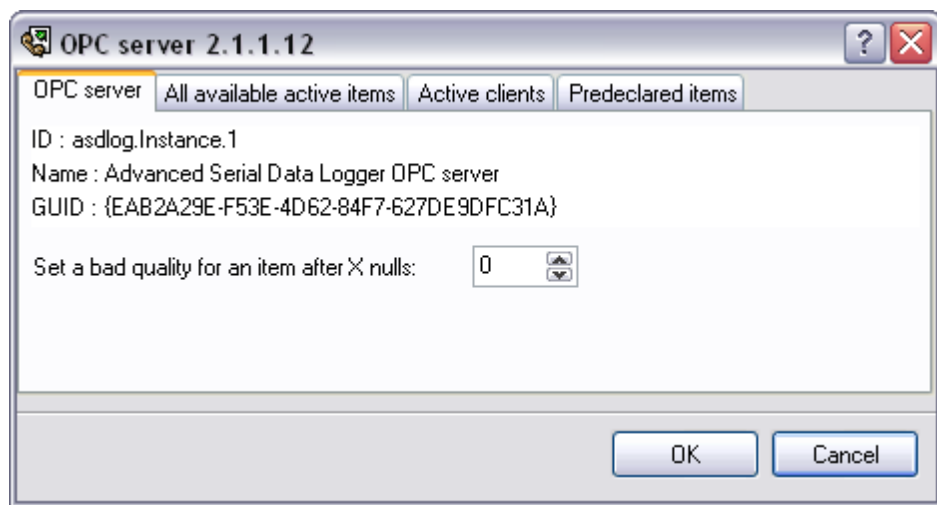


Fig.12 OPC server parameters

Advanced TCP/IP Data Logger are parsing all incoming data to one or more variables and OPC client are getting it (fig.13). After connecting to the OPC server you will get list of all variables.

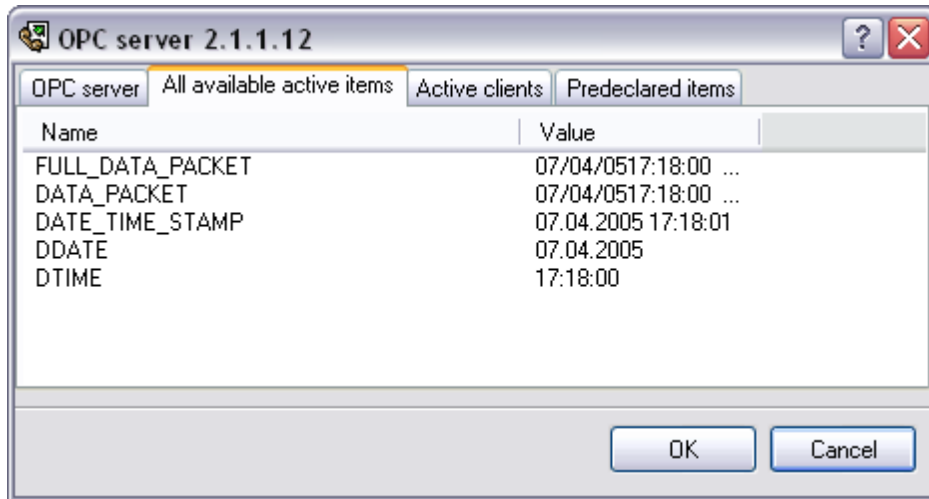


Fig.13 OPC server active items

Clients activity is showed on the "Active clients" tab. The top node is client, below is group of items and connected items. By double-clicking, you can get a detailed information about each node.

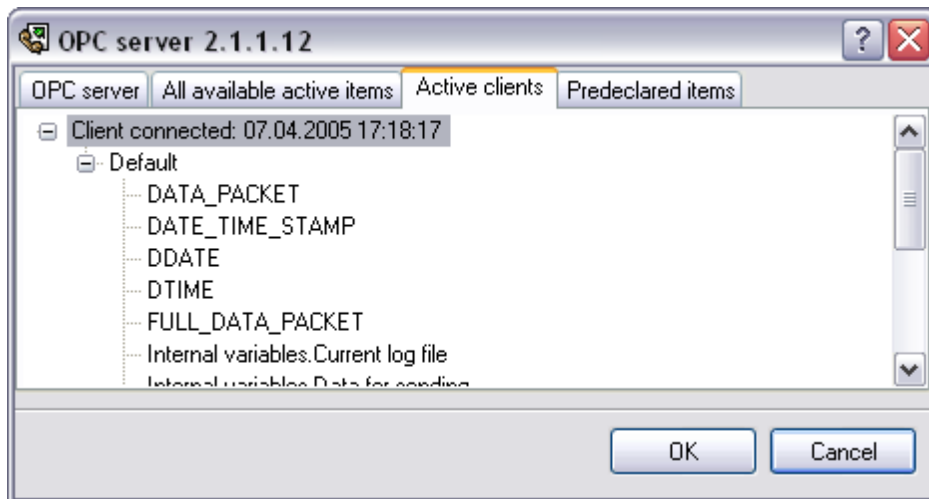


Fig.14. OPC server clients

Advanced TCP/IP Data Logger creates new variables at "on-the-fly" mode. The Advanced TCP/IP Data Logger starts without any variables and get it only after first data had been received. If your client OPC will connect to the OPC server before, than data had been processed, then it will get empty list of variables and your OPC client should poll the OPC server for updating list of variables. If your OPC client doesn't allow it, then your can predeclare all variables (fig.15). In this case the OPC server will create these variables with empty values, immediate after starting and your OPC client will get these names while connecting.

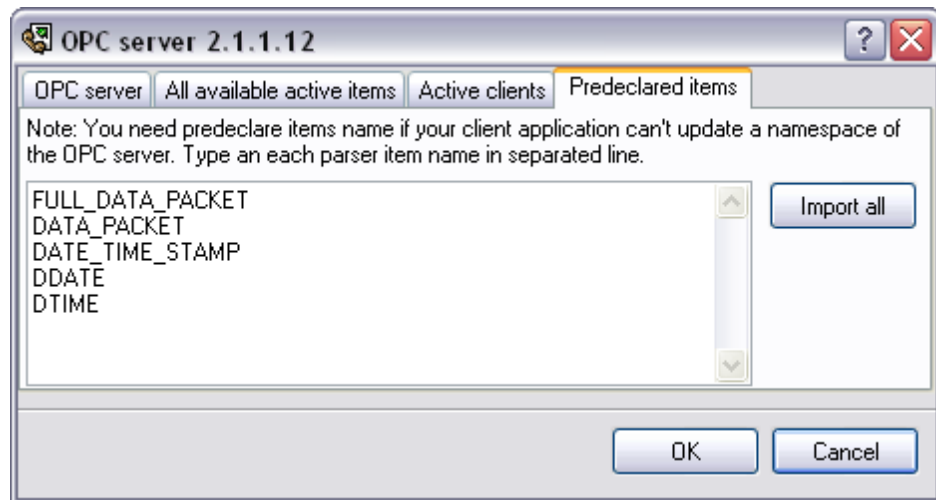


Fig.15. OPC server pre-declaration

4.5 Window view

This tab in program options (fig. 16) allows you to customize appearance of the main window of the program (fig. 17^b). You can access this tab through the "Options->Program options" menu item in the main window.

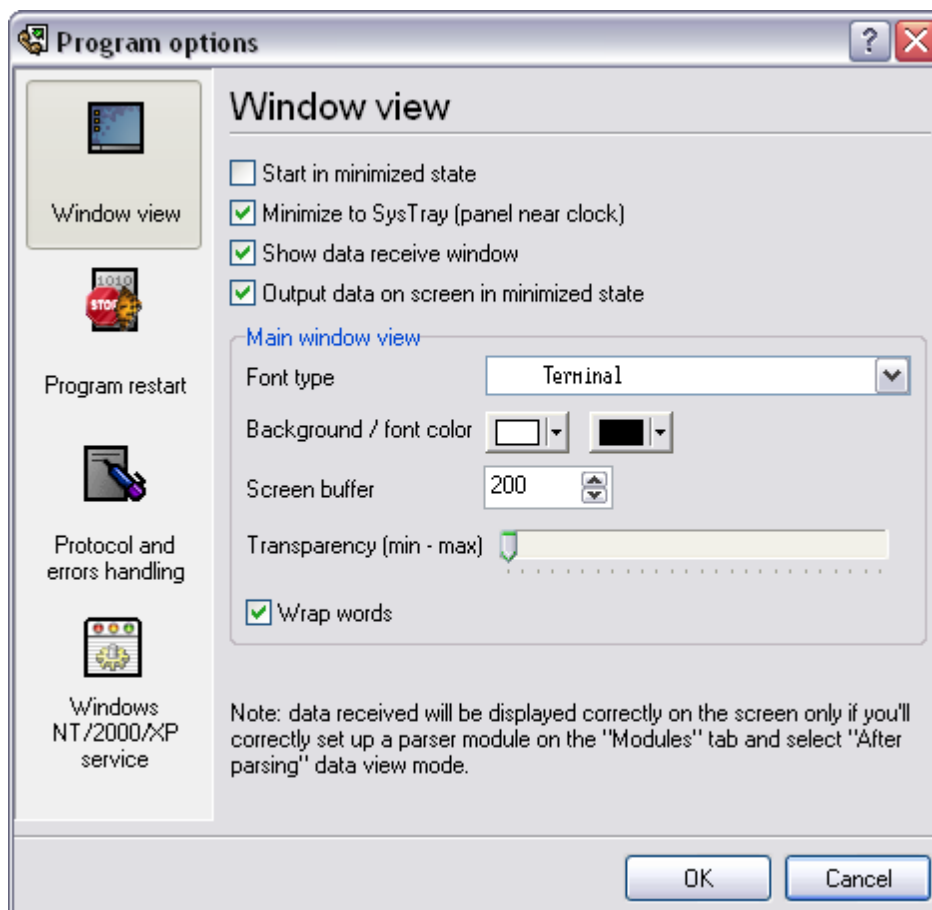


Fig.16. Window view setting

You can set following parameters:

- **Start in minimized state** - at start Advanced TCP/IP Data Logger will automatically put its icon on panel near clock (SysTray fig.17);
- **Minimize to SysTray** - while the main window of Advanced TCP/IP Data Logger minimizes, the program will automatically put its icon to the panel near clock;
- **Show data window** - if you specify this option, then the program will display all data in the main window. If you are logging many ports on slow PC, then you can decrease computer CPU load rate with disabling of this option;
- **Output data on screen in minimized state** - if you'll enable this option, then the program will display processed data in minimized state. If you are logging many data sources on slow PC, then you can decrease computer central processor load rate with disabling of this option;
- **Font type** - the data will be displayed with this font type in the main window only. We recommend to use mono-spaced fonts in this field, such as: Terminal, Courier etc.;
- **Screen buffer** - at exceeding of value specified the data window will be cleaned;
- **Window view** - will let you setup data window view (font color, font type, background color).
- **Transparency** - in Windows 2000, Windows XP, Windows 2003 will let you set transparency of the main window. The most left position is normal window view and most right position is maximum transparency.
- **Wrap words** - if you didn't configure a parser module or your data flow doesn't contain a blocks separator, then your data without this option enabled will be displayed as one long string in the data window.



Fig.17 Systray - panel near clock

4.6 Program restart

Sometimes the program should be restarted. It can be done automatically at the specified time. To do that, specify the time for restarting the program on the "Program restart" tab in program options "Options->Program options".

4.7 Protocol and errors handling

While the program execute, she generates many messages about errors and events. All these messages are being registered in a protocol file. This can be start or stop of the program, some messages from plug-in modules etc. On this tab you can define the kind of messages, which you want to put a protocol file (fig.18). Here you can set maximum protocol file size and a formatting mode. Usually, the protocol file is in a program folder and has the name of the program with the 'log' extension.

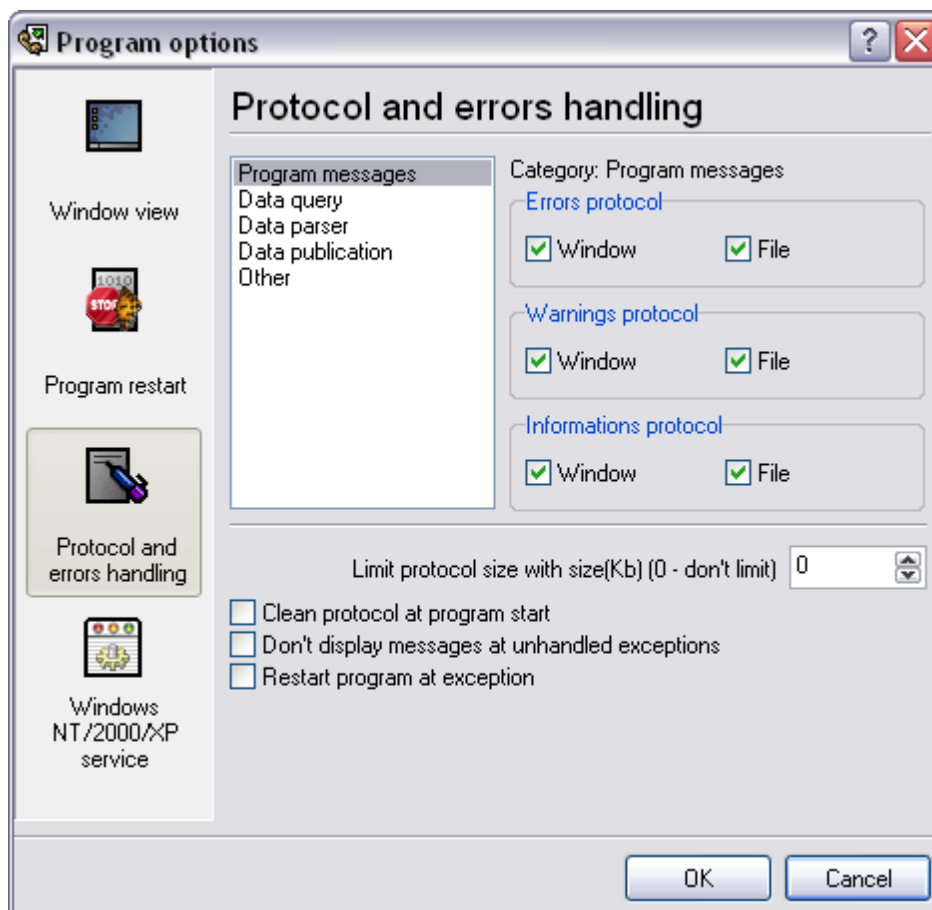


Fig.18. Protocol settings.

Advanced TCP/IP Data Logger works with three types of messages:

- **Information messages** - this type of messages informs you on operations which are fulfilled in the current time;
- **Warnings** - warns you of possible failures or possible errors. Interference of the user is not required, but check is required;
- **Errors** - the program has detected an error which elimination needs involvement of the user.

There is the possibility to log following events:

- **Program messages** - messages about start or stop of the program, etc.;
- **Data query** - messages which are generated in a data query module;
- **Data parser** - messages which are generated in a data parser module;
- **Data export** - messages which are generated in a data export module;
- **Other** - messages that can not be associated with types above.

You can write each type of messages to a protocol file or/and to the list in the main window. Please, specify necessary options for each message type at "Window" and "File" fields.

If you don't want to allow to grow a protocol file size to an unlimited size, then you can enable the "Clean protocol at program start" or limit protocol file size in the "Size" field.

Some exceptional messages can occur while the program execute. In most cases these messages crash the program and the most safe way is to restart the program. Please, specify the "Restart program at exception" option and the program will be restarted automatically.

If you want look all program messages, then you can disable the "Don't display messages at unhandled exceptions" check box and the program will open the exception message window with detailed information.

4.8 Windows NT/2000/XP/Vista service

4.8.1 Configuration

Windows NT/2000/XP/Vista services use will let you:

- control service on local and remote computers, including remote computers with Windows NT 4.0 system;
- setup actions on emergency service restore in case of failure, for example auto service or computer restart (only on computers with Windows 2000 or later);
- create for services other names and descriptions, to find them easier (only on computers with system Windows 2000 or later);
- run service before user login (password input);
- service can be setup on automatic start after operation system load.

Note: you must be logged in as an administrator in order to change the configuration or control the service in any way (start, stop, pause, continue).

If you want to use the program as a service application, then, please, go to the "Options -> Program options -> Windows NT/2000/XP service" tab (fig.19), then enable the "Use program as a service" check box. Later, please, specify the startup type of the service. There can be following variants:



Fig.19 Service settings.

1. **Automatic** - service will be started automatically at every Windows start, before user login;
2. **Manual** - you can start the service application in the "Services" window in the Control panel (fig.22);
3. **Disabled** - service can't be started.

If you want to change program settings while service mode, then enable the "Allow service to interact with desktop" option. In this case, the program will put the icon to the SysTray (fig.20). But then your interactive service will be restarted while user log off.

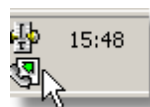


Fig.20 Service icon in Systray.

If you use data bases or special drivers, before service run, these applications must be run. You can specify what services should be started before Advanced TCP/IP Data Logger in the "Program depends on services" window (fig.21).

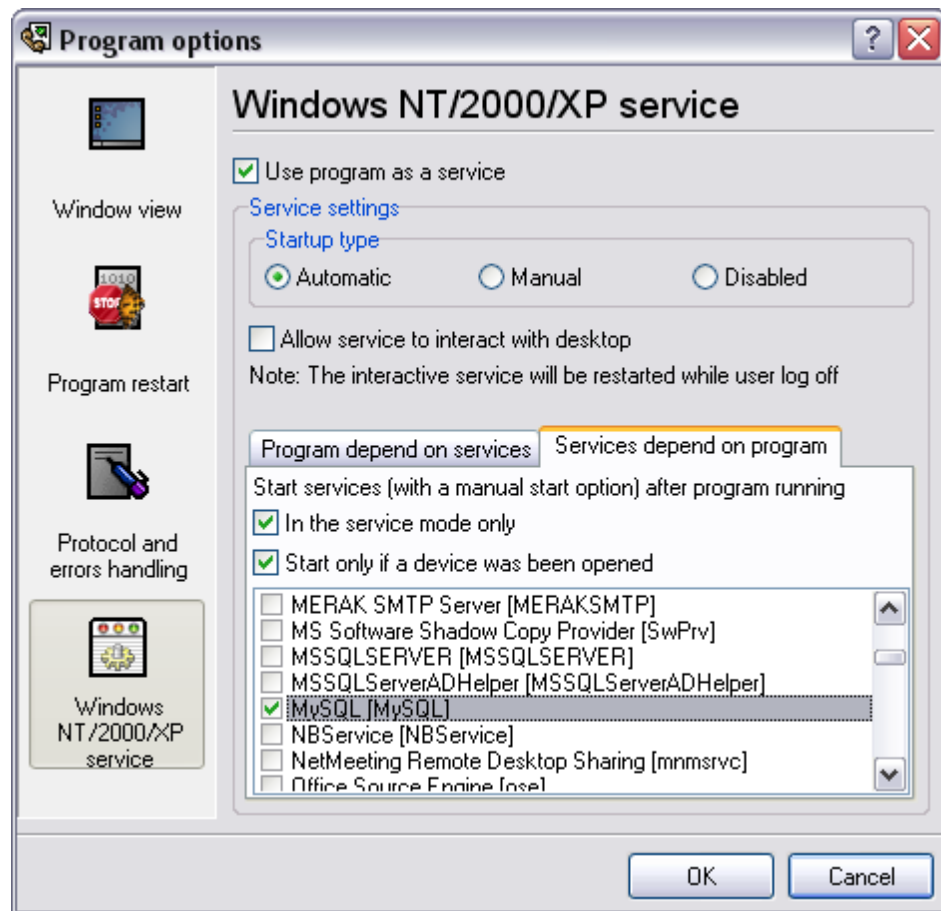


Fig.21 Service settings #2.

In some case you need to start Advanced TCP/IP Data Logger before starting other services. In this case you should:

- Switch a start mode of a target service to "Manual";
- Start Advanced TCP/IP Data Logger;
- Set on the target service at the "Services depend on ASDL" tab;
- Select mode when you need start these service;
- Restart Advanced TCP/IP Data Logger.

After you installed the service mode of the program, restart a computer or run the service manually from the "Services" window in the Control panel (fig.22)

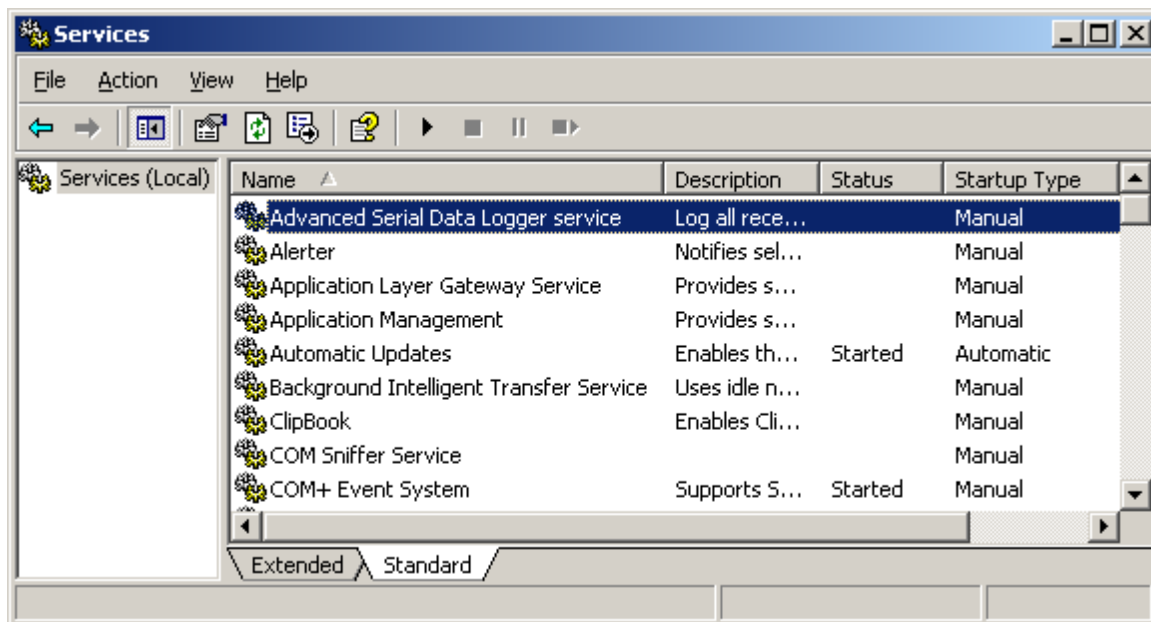


Fig.22 Manual service run (in Windows 2000).

After start of the service, the service processes names will be displayed in a process list: aipdlogsv.exe and aipdlog.exe (fig.23). The 'aipdlogsv.exe' application makes interface between the service manager and the Advanced TCP/IP Data Logger software. Unlike svany.exe utility, our service stops safely.

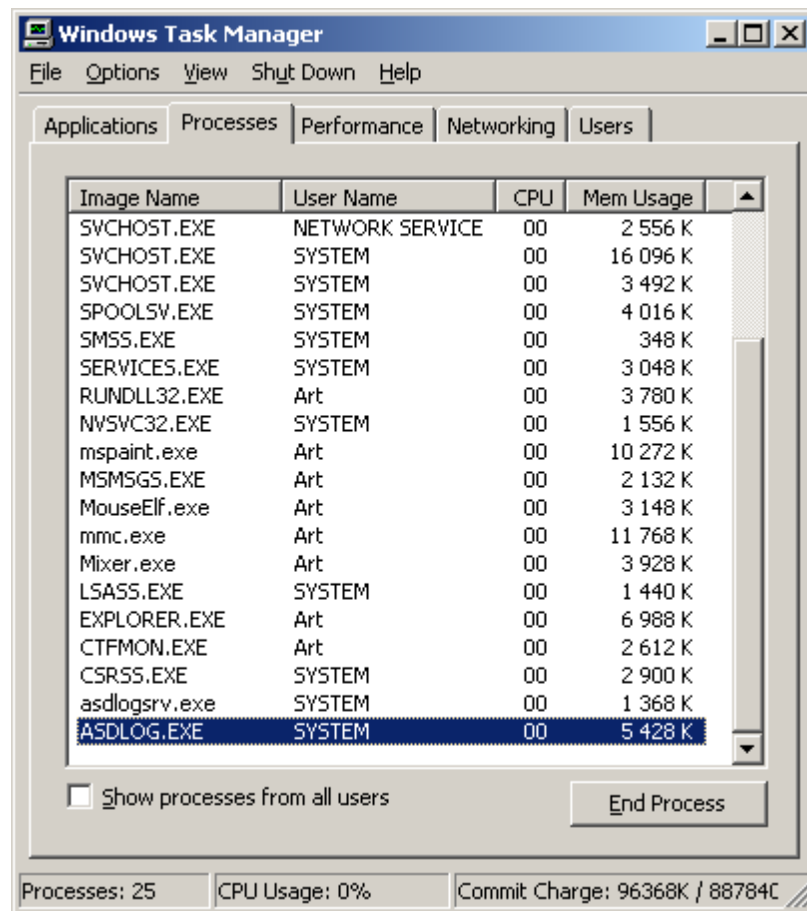


Fig.23 Process list.

If you want to configure the program as a service, then you must be logged with administrator rights. The service application can be controlled, stopped or removed with help of a command line string. Run `apidlogsrv.exe` with following parameters:

- `/?` - short help;
- `/I` - install service for start in manual mode;
- `/A` - install service for start in automatic mode;
- `/D` - install service in off state;
- `/R` - remove service from computer.

4.8.2 Windows Vista notes

One of the ways Vista's security was improved was by separating system services and user applications into separate 'sessions'. Keeping the system services isolated helps to better secure them, but also makes any interactive interface unavailable to the user. That's where the Interactive Services Detection service comes in. When a service needs to interact with the user, Interactive Services Detection presents a dialog that will switch the user to the session where the service is running so they can interact with the service. For an excellent, detailed description of this, see next paragraph.

Many sites recommend disabling this service, but doing so will result in you not being able to

interact with any services that require your attention. This service is run manually by default, so there is little point to disabling it unless you don't want to be bothered by important information from the software you may be trying to run.

- **Display Name:** Interactive Services Detection
- **Service Name:** UI0Detect
- **Process Name:** UI0Detect.exe
- **Description:** Enables user notification of user input for interactive services, which enables access to dialogs created by interactive services when they appear. If this service is stopped, notifications of new interactive service dialogs will no longer function and there may no longer be access to interactive service dialogs. If this service is disabled, both notifications of and access to new interactive service dialogs will no longer function.
- **Path to Executable:** %windir%\system32\UI0Detect.exe
- **Default Startup:**
 - * Home Basic: Manual
 - * Home Premium: Manual
 - * Business: Manual
 - * Enterprise: Manual
 - * Ultimate: Manual

4.9 Useful advices

- Look through hint helps on all window elements - this will help you to get a picture of this element's function.
- Baud rate, data bits number, stop bits number, parity type and other can be changed during program work, without program reload!
- To transfer settings to another computer, save settings to file or to run at one time several Advanced TCP/IP Data Logger program instances use option "Save settings to INI-file". In that case program settings will be placed in file aipdlog.ini in folder, where program is installed.
- Many main window elements have "hot" keys for quick access to its functions.
 - Ctrl+S - analogues to click on "Start/Pause" button on toolbar.
 - Ctrl+C - analogues to click on "Clear" button on toolbar.
 - Ctrl+P - call options window with configuration settings.
 - Ctrl+L - call options window with log file settings.
 - With Ctrl+W hot key You can configure window view.
 - Ctrl+R - show window with program's restart settings.
 - Ctrl+E - Windows NT/2000/XP service settings is available here.
 - Ctrl+M - here you can configure queries, parsers and other modules.

4.10 Work complete

After program work stop all program settings will be saved in Windows registry. Opened for reading/writing data sources will be automatically closed and will be available for other applications.

5 Having problems?

5.1 Program doesn't run or work

It is necessary to make sure in proper time installation on your computer, so as if you put clock after program installation, protection from use after trial period works.

Also program won't work, if you started SoftIce application debug environment or some other. In any other case, please, inform our developers about your problems, our address support@aggsoft.com.

Program may not work properly if your firewall blocks program activity. How to configure firewall settings, you can read in the chapter "[IP settings](#)"¹⁵.