AsLogger
Quick-Change Measurement Series Recorder

Doc. No ENP8101
Version: 2014-11-18
ASKOM® and Asix® are registered trademarks of ASKOM Spółka z o.o., Gliwice. Other brand names, trademarks, and registered trademarks are the property of their respective holders.

All rights reserved including the right of reproduction in whole or in part in any form. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without prior written permission from the ASKOM.

ASKOM sp. z o. o. shall not be liable for any damages arising out of the use of information included in the publication content.

Copyright © 2014, ASKOM Sp. z o. o., Gliwice

# Table of Contents

1 Application Description.................................................................................. 4
2 License ........................................................................................................... 5
3 Software Installation........................................................................................ 6
4 Program Main Window .................................................................................... 7
   4.1 MSSQL Server .......................................................................................... 9
   4.2 Measurement Series Database .................................................................. 10
   4.3 Measurement Series Recording Plan ........................................................ 11
   4.4 Measurement Point ................................................................................. 12
   4.5 Recorded Measurement Series ............................................................... 13
5 Measurement Series Recording ....................................................................... 14
   5.1 Configuring Connection with the MSSQL Server ..................................... 15
   5.2 Creating Database for Recorded Measurement Series .............................. 16
   5.3 Creating an Archive for a Measurement Series Recording Plan ............... 17
   5.4 Parameterizing a Recording Plan for an OPC Server ............................... 18
   5.5 Parameterizing a Recording Plan for an Advantech Device/Card ............. 19
   5.6 Parameterising a Recording Plan for an Analogue Input Card Simulator .. 20
   5.7 Parameterizing Measurement Points for an OPC Server Plan .................. 21
   5.8 Parameterizing Measurement Points for an Advantech Device/Card ......... 22
   5.9 Parameterizing Measurement Points for an Analogue Input Card Simulator ........................................................................................................ 23
   5.10 Parameterizing the Recording with Asix System Drivers ......................... 24
6 Viewing Measurement Series ......................................................................... 25
7 Accessing AsLogger Data via Scripts ............................................................ 27
1 Application Description

The **AsLogger** - **Quick-Change Measurement Series Recorder** package is a Windows-based application for recording, archiving and analysing measurement series where measurement samples are time-stamped with accuracy of 1µs. Measurements may be taken by analogue and digital cards controlled directly by the Asix application or by autonomous measurement / recording devices connected to a PC, including programmable controllers and electrical protections. AsLogger facilitates analysis of measurement experiments where high-resolution series are collected. Measurement-series data is taken from a recording device, pre-processed and saved in an SQL database.

The AsTrend application enables you to display measurement series graphs of the AsLogger module as charts or tables. It is possible to view AsLogger graphs and other graphs supported by the AsTrend application at the same time.

Data may be analysed both on the same computer as recording and on network stations. You may also access data in the AsLogger base from any application with an ODBC or OLE DB/ADO interface.

AsLogger handles the retrieval of data from an OPC server, thus supporting any device which meets the requirements of data exchange open standards. It also supports control and measurement cards and USB measurement equipment by Advantech, where measurement data may be read in the ‘Fast AI Transferring’ mode (Interrupt Transferring or DMA Transferring), using the ADSAPI library by Advantech. Further, AsLogger supports hardware recorders - MUPASZ 2001G, MUPASZ 07, MUPASZ710 - and MultiMuz-family devices.

Available recording devices include an analogue-input card simulator, which enables you to learn application functions without connecting the recording device.

One of the uses of the AsLogger application is to analyse the operation of electrical protections - quick-change time series of (current, voltage, power) measurements and of binary signals at the time of protection operation. The internal memory of electrical protections is generally small and allows to store a maximum of several recordings - usually just one (the last one). An analysis of time graphs requires the connection of a computer with appropriate utility software and reading of changes from the device memory. If the protection operates again before trends are read, they will be lost irretrievably. When using protections by different manufacturers, it is necessary to have and know how to use several utility applications. AsLogger enables you to get a station for automated reading of time graphs recorded by electrical protections and archiving in a single database available via Ethernet to any number of users. The hierarchical data structure (switching station - bay - type of protection - specific device) enhances significantly searching and analysis in the future. Regardless of the source device, all time graphs are available for analysis in the same, easy-to-use software environment.
2 License

The AsLogger software offer includes:

- **AsLogger Serwer + OPC DA 2.0 + driver license** (Advantech or Mupasz 2001G or Mupasz07 or MultiMuz or Mupasz710) - to record and view measurement series;
- **AsLogger Client** license - to view graphs.

The application is protected with an HASP key.
3 Software Installation

Prior to installing AsLogger, it is necessary to install a Microsoft SQL server (including the gratuitous Express version) and HASP key for AsLogger.

During the installation the application requires the indication of the language to be used for installation and after that for installed version of the software.
4 Program Main Window

The main window of the ‘AsLogger - Manager’ application comprises a menu, list of databases available in the MSSQL server with objects they include and panel to view object content.

Fig. AsLogger Manager Main Screen.

The list of objects includes:
- measurement series databases,
- recording plans,
- measurement points,
- series.

The other objects have names given by a user when creating them.

Specific objects are described in the table below.
AsLogger

*Table. List of Objects Displayed in the Main Window of AsLogger.*

<table>
<thead>
<tr>
<th>Tree level no.</th>
<th>Object name</th>
<th>Description</th>
<th>Information displayed in the object panel</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td><code>&lt;SQL server name&gt;</code></td>
<td>The name of the SQL server the user is connected to</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td><code>&lt;measurement series database&gt;</code></td>
<td>An SQL server database created by the AsLogger manager module; it includes components necessary to store measurement series</td>
<td>Measurement Series Database object</td>
</tr>
<tr>
<td>2</td>
<td><code>&lt;recording plan&gt;</code></td>
<td>Set of all the information necessary for recording measurement series including information on measurement points</td>
<td>Recording Plan object</td>
</tr>
<tr>
<td>3</td>
<td>Measurement points</td>
<td>Set of all the measurement points created in the recording plan</td>
<td>List of measurement points</td>
</tr>
<tr>
<td>3</td>
<td>Series</td>
<td>Set of all the measurement series recorded according to a specific recording plan</td>
<td>List of measurement series recorded</td>
</tr>
</tbody>
</table>
4. 1 MSSQL Server

Measurement series data is stored in a **database managed by a Microsoft SQL** server (those could be gratuitous **Express** versions).

To perform any operations, the AsLogger application needs to be connected to an MSSQL server.
4.2 Measurement Series Database

The measurement series database is a database of the MSSQL server created by AsLogger; it includes components necessary to store measurement series recording plans and data from recorded measurement series.

Commands used to perform operations on series databases are in the Series Database menu:

- **New Database** - displays a request for the name of the new database and creates a base with the indicated name in the server;
- **Refresh View** - refreshes the view of a selected series database;
- **Delete Database** - deletes the currently selected series database.
4.3 Measurement Series Recording Plan

The **measurement series recording plan** is a set of all the information necessary to record a measurement series.

Commands used to perform operations on recording plans are included in the **Plan** menu:

- **New plan, Edit Plan, Delete Plan** - are used to create, edit and delete a new recording plan;
- **Create Copy of Plan** - enables you to create a new recording plan which includes all the information from the currently selected recording plan;
- **Execute Plan** - is used to start recording a measurement series; running the command displays a dialogue box to enter the recording time;

If you enter such a long recording time that the database reaches its maximum size (as permitted for the given Microsoft SQL server), the archiving will be interrupted. If the database contains such a quantity of data that the recording of a new series leads to exceeding the base maximum size, then delete recorded series or create a new series database with a new series recording plan and record measurement series in that database.

The recording of the first measurement series prevents the possibility to modify the recording plan and its components further.

The **Execute** command is only available when the application uses a local MSQLE server.

Once the recording of a measurement series has started, you may view values being recorded on an ongoing basis. To this end, find the recorded series in the series list, in the **Series** menu choose the **Run the program to analyze series - AsTrend** command. The graph will be refreshed and positioned on the recently recorded values in an automatic and periodic manner.

- **Automatic Executing** - displays a window with information on the current status of the automatic executing of the plan recording.

The automatic executing of recording is configured at the level of drivers compatible with AsLogger. The Architekt application is used to parameterize drivers.
4.4 Measurement Point

A measurement point is the name of a set of information necessary to record measurements from a single input of an archiving device.

Commands used to perform operations on measurement points are included in the Point menu:

- **New Point** - the command is used to create a new measurement point;
- **Edit Point** - is used to edit an existing point;
- **Delete Point** - deletes a point from the recording plan.
4.5 Recorded Measurement Series

You may display data from recorded measurement series using the Series object defined in the database list in the main window of AsLogger.

Fig. AsLogger Main Screen - Display of Data from Recorded Measurement Series.

Commands used to perform operations on series are included in the Series menu in the AsLogger main window:

- **Run the program to analyze series - AsTrend** - is used to display a graph of a selected measurement series in the AsTrend application;
- **Create Archive for Plan** - creates an archive for a specific plan (data of recorded measurement series) in the measurement series database (see: 5.3 Creating an Archive for a Measurement Series Recording Plan);
- **Delete Archive and All series** - deletes all series recorded according to a specific series plan. Running this operation again enables you to edit the plan and its measurement points.

When the plan has an archive, it is blocked for edition. When the plan has the archive, it is possible to edit some options of the point.
5 Measurement Series Recording

Measurement-series data is taken from a recording device, pre-processed and saved in an SQL database.

Recording is performed directly by AsLogger, which subsequently enables you to view data from recorded series with the AsTrend application.

AsLogger supports:

1. the retrieval of data from an OPC server, thus supporting any device which meets the requirements of data exchange open standards;
2. control and measurement cards and USB measurement equipment by Advantech, where measurement data may be read in the ‘Fast AI Transferring’ mode (Interrupt Transferring or DMA Transferring), using the ADSAPI library by Advantech;
3. MUPASZ 2001G, MUPASZ 07 and MUPASZ710 hardware recorders and MultiMuz-family devices via Asix-system drivers (MupaszRtu for the exchange of data with Mupasz 2001G, Mupasz 07 devices; Mupasz710_RS/MupaszRtu_TCPIP drivers for the exchange of data with Mupasz 710 devices; Multimuz/Multimuz_TCPIP/Multimuz3/Multimuz3_TCPIP drivers for the exchange of data with Multimuz-family devices);
4. an analogue-input card simulator, which enables you to learn application functions without connecting the recording device.

Ad. 1 and 2

In the first and second above-mentioned cases it is necessary to:
- configure connection with the MSSQL server in the AsLogger application;
- define databases for storing data from recorded measurement series;
- create a recording plan, which includes selecting the name of the recording devices;
- define measurement points.

Ad. 3

When selected Asix-system drivers perform the recording of measurement series, drivers create objects necessary for recording and storing series data and the Architekt application should be used to parameterise drivers.

The recording of a measurement series starts once you have run the *Execute Plan* command in the *Plan* menu.
5.1 Configuring Connection with the MSSQL Server

In order to configure connection of AsLogger with the MSSQL server:

1. Choose the *Select MSQL Server* command in the *Manager* menu.
2. In the ‘AsLogger - Manager’ window, choose MSSQL Server selecting one of the two available options:
   
   - *MSQL Local Primary Server* - selecting this option means that the application will be connected to a server operating on a local computer;
   - *This MSQL Server* - the field enables you to indicate the name of a server which operates on another computer or the name of an instance and name of the computer;

3. Confirm your choice with *OK*.

To have a full access to the AsLogger database, you need an administrator account in the SQL server computer or an ordinary user account with full rights for measurement series databases granted by the SQL server administrator.
5.2 Creating Database for Recorded Measurement Series

In order to create an AsLogger database in the MSSQL server:

1. Choose the *New Database* command in the *New Database* menu.
2. Enter the name of a measurement series database.
3. Confirm your choice with *OK*. 
5.3 Creating an Archive for a Measurement Series Recording Plan

Plan archives are created automatically by drivers when a series is recorded for the first time.

If measurement series are created by means of scripts - see: chapter 7 Accessing AsLogger Data via Scripts (solely for applications created with the Evo technology) - it is necessary to create the archive manually with the Create Archive for Plan command in the Series menu.
5.4 Parameterizing a Recording Plan for an OPC Server

In order to parameterize a recording plan for an OPC server:

1. Click the AsLogger database for which the plan will be created.
2. Choose the New Plan command in the Plan menu.
3. Select the field next to the Current Data OPC Server device in the 'Select Device Name' window.
4. Define fields in the window for parameterizing (creating a new or editing an existing) recording plan for the OPC server, which enables you to define: the name of a series, name of the OPC server from which data will be taken, description of the series and sampling period. You may also select the name of the OPC server from a drop-down list.
5. Confirm changes with OK.

![Window for Parameterizing the Recording Plan for the OPC Driver.](image)

The ‘OPC DA Client’ driver ensures the recording speed available in the data source (OPC server) allowing for the possible speed of the transmission link to the PC on which the AsLogger Server is installed (the recording speed is significantly higher than 1 μs).
5.5 Parameterizing a Recording Plan for an Advantech Device/Card

In order to create a recording plan for an Advantech device/card:

1. Click the AsLogger database for which the plan will be created.
2. Select the **New Plan** command in the **Plan** menu.
3. Define fields in the window for parameterizing (creating a new or editing an existing) recording plan for the Advantech device/card: the name of a series, comments for the plan and sampling period.
4. Confirm changes with **OK**.

*Fig. Window for Parameterising a Recording Plan for an Advantech Device/Card.*
5.6 Parameterising a Recording Plan for an Analogue Input Card Simulator

In order to create a recording plan for an analogue input card simulator:

1. Click the AsLogger database for which the plan will be created.
2. Select the **New Plan** command in the **Plan** menu.
3. Define fields in the window for parameterizing (creating a new or editing an existing) recording plan for the card simulator: the name of a series, comments for the plan and card address.
4. Confirm changes with **OK**.

![Window for Parameterising a Recording Plan for an Analogue Input Card Simulator.](image)
5.7 Parameterizing Measurement Points for an OPC Server Plan

When parameterizing measurement points for an OPC server, you need to define: the address of the OPC server, name, description, measurement type, unit and upper and lower limits.

![Window for Parameterizing a Measurement Point for an OPC Server Plan.](image)

*Fig. Window for Parameterizing a Measurement Point for an OPC Server Plan.*
AsLogger

5.8 Parameterizing Measurement Points for an Advantech Device/Card

In the dialogue box for parameterizing measurement points for an Advantech device/card plan, you need to define: the name, description, type of measurement, address of the card of the device, unit, upper and lower limits and display format.

![Window for Parameterizing a Measurement Point for an Advantech Device/Card Plan.](image)

*Fig. Window for Parameterizing a Measurement Point for an Advantech Device/Card Plan.*
5.9 Parameterizing Measurement Points for an Analogue Input Card Simulator

The dialogue box for parameterizing measurement points for an analogue input card simulator includes the definition of: the name and description of the point, type of measurement, address, unit and upper/lower limits.

![Window for Parameterizing a Measurement Point for an Analogue Input Card Simulator.](image)

*Fig. Window for Parameterizing a Measurement Point for an Analogue Input Card Simulator.*
5.10 Parameterizing the Recording with Asix System Drivers

When selected Asix system drivers perform the recording of measurement series, drivers create objects necessary for recording and storing series data and the Architekt application should be used to parameterize drivers.

The MupaszRtu driver is used for exchanging data with Mupasz 2001G, Mupasz 07 devices; Mupasz710_RS/MupaszRtu_TCPIP drivers for exchanging data with Mupasz 710 devices; Multimuz/Multimuz_TCPIP/Multimuz3/Multimuz3_TCPIP drivers for exchanging data with Multimuz-family devices.

To parameterize the driver it is necessary to set the option of Recording disturbances in the AsLogger Base which is available in tabs for parameterizing drivers in the window of the Architect program - see CommunicationsDrivers files (PDF/CHM) for details on driver parameterization. To enable disturbance recording in the AsLogger database, it is necessary to declare the name of the server and name of the AsLogger database. The driver will create plans and points. The connection of AsLogger to the database server will automatically load the created plans and measurement points.
6 Viewing Measurement Series

Once recorded, a measurement series may be analysed in the AsTrend program.

To display measurement series data in AsTrend, select the record of the chosen series in the AsLogger window and right-click to enable a context menu. Selecting in the menu the Run the program to analyze series - AsTrend command activates the AsTrend program.

The command to load AsTrend also opens a window to choose an AsLogger waveform in AsTrend.

See the AsTrend manual (PDF/CHM files) for details concerning the operation of AsTrend.

Fig. AsTrend - a Window for Selection an AsLogger Graph (Series Data).
AsLogger

Fig. AsTrend - Viewing AsLogger Measurement Series Data.
7 Accessing AsLogger Data via Scripts

Applications developed in the Evo version of the Asix system may access data of measurement series recorded in an AsLogger database via scripts.

An AsloggerAccess-class object enables you to access data archived in a database of the AsLogger module. This solution also provides the possibility to save new series. You may obtain access to the AsloggerAccess object by means of Aslogger properties of the IApplication interface.

An AsloggerSeries-class object enables you to create new measurement series. Objects in this class are developed with the CreateSeries method of the AsloggerAccess class.

See the Asix.Evo_Scripts manual (PDF/CHM) for details concerning the development of scripts for accessing AsLogger series data.