XLReporter
Specification

Version 16

The Complete Reporting Solution

Contents

XLReporter Specification 5

General 5
Designing Templates 5
Producing Reports 6
Reporting Methods 7
Storage 7
Report File Protection 7
Report Printing 8
Report Publishing 8

XLReporter Specification

General

The solution shall be a Windows based software package that can be used on Windows 10, Windows 11 and Windows Server 2012, 2016, 2019 and 2022.

The software shall be capable of creating reports directly from live values in HMI and OPC servers, historical values from proprietary historians/OPC-HDA servers and any relational database. Creation and modification of the report templates shall not require any changes to the system source code or to the configuration of the real-time and historical data servers.

The software shall be capable of producing analytics directly from live values, from historians, from databases and from text files produced by data recorders. Connectors shall be included to provide easy access to the analytical data for reporting purposes.

The software shall be capable of managing manually entered data such as operator rounds and laboratory results, using forms designed in its design studio or Excel. A centrally located database shall be created in the background without the need of any database programming. Data stored into the database shall be available for reporting along with any other data described above.

The software shall be able to produce reports from an Excel template in two distinct ways, automatically and interactively.

Automatic reports shall be produced periodically or on events by a scheduler that can be run as a Windows service. All the features of Excel such as creating and naming workbooks, creating and updating worksheets, saving worksheets, printing and publishing shall be performed automatically, in the background with resources used when required.

Interactive reports shall be produced on demand by a user specifying report parameters such as dates and tags. Interactive reporting shall take place on the local station, from any place on the network or any mobile device with a web browser, enabling viewing and sharing of Excel reports and forms from multiple locations (clients) with user privilege assigned by an administrator.

Designing Templates

The software shall produce reports and manage manual data entry from Excel templates. Ready-to-use templates for reports and forms shall be provided.

The solution has its own template design studio. Microsoft Excel can be used to design templates but is not required. Support for Excel 2010, 2013, 2016, 2019, 2021 and Office 365 (full install) should be available. Excel is not required for producing reports. The software shall provide its own point and click features in the Excel environment so the user can specify their data connections to the process using built-in tag browsing. The software shall take advantage of the new file formats and the fluent user interface technology by providing its own ribbon menu in Excel.

Report templates shall be used to create reports, automatically or on-demand. Form templates shall be used to collect and store manual data to a central database.

The software shall provide tools to simplify the template design process. During the design, the user shall select the real-time and historical tag names from tag browsers provided by the reporting software. The content of the tag browser shall reflect the list of current tags that are configured in the real-time and historical databases. Database tables that store user data entry shall be created and maintained.

The software shall allow for the importing of existing Excel workbooks developed by the end user and government or regulatory agencies as templates from which to generate reports.

The software shall provide means for the user to configure and test their requirement from the data sources with no programming, scripting or knowledge of specialized languages such as Structured Query Language.

The software shall provide a simulation environment. The simulation environment shall be used to simulate the production of reports to verify that the format, content and links to the data sources are functional and correct. The simulation shall take place before the report templates are deployed for general use. The simulation environment shall also be used for off-line development.

The software shall provide standard charts and templates containing graphical elements such as bar charts, pie charts, scatter plots etc. The graphic elements shall be associated with process values in the report and will automatically update each time the process values in the report change.

The software shall have the capability of handling dynamic ranges i.e., ranges that have a dynamic number of rows and columns. Components, such as and formula, shall be adjusted automatically to reflect the content of a dynamic range.

The software shall provide reports containing automated data management, such as sorting, filtering, color coding etc. In addition, statistical calculations shall be associated with process values in the report and will automatically update each time the process values in the report change.

The software shall be designed to effectively and clearly report historical data. The ordering and the amount of historical data shall be selectable. Configuration of a report by the user shall consist of simply selecting the process inputs that are to appear in the report and their relative placement across the page, title of the page and column heading for each point. The reporting function shall automatically print the accumulated value, and if necessary, scale the value.

Producing Reports

The reporting software shall produce reports from the real-time database (that is continuously updated to reflect the values of process parameters), historical database, relational database and/or manually entered data.

A mixture of real-time, historical, relational and manual data for a single report shall be supported.

Reports generated from the real-time database shall contain either a single snapshot of the process parameters taken once in the reporting period or multiple snapshots taken over a specific reporting period. For reports that contain multiple snapshots, each snapshot shall be entered into the report according to the user's specification e.g., in column or row format. It shall be possible to include derived information, such as the sum, minimum, maximum, or the average, etc., over the rows and columns.

The software shall indicate any value that was not valid during any part of the reporting period.

The software shall place minimal CPU load.

Any completed report shall be exportable to PDF, Web pages, ASCII data (CSV or TXT) so that it is available to other software packages. The report shall be automatically distributed to printers, servers, e-mail and FTP servers.

Reporting Methods

The software shall support three operating methods.

a) Automatically and in the Background.

The software shall provide a Scheduler to automatically initiate the generation of reports, periodically, i.e., hourly, daily, weekly, monthly, end of month, quarterly and yearly or on an event, i.e., a process condition or exception.

Reports shall be generated from pre-configured report templates without any user intervention. The reports shall contain real-time or historical information. In the case of automatic historical reports, the reporting software will calculate the time frame according to the user's specification e.g., the last 24 hours from the current time.

It shall be possible to automatically execute special instructions or calculations in a report. These instructions shall be contained in user defined macros associated with the report.

b) On Demand from Process Displays

The software shall provide adequate tools so that reports can be generated and printed on-demand from an HMI process display. For real-time reports, the user shall select the report and request the generation, e.g., from a pushbutton press. For historical reports, the user shall select a time frame and check off which report template they want to print for that time frame. The software shall also allow a "shell report" to be provided where the user can select dates, times and parameters for the report.

c) Interactively any Node on the network

The software shall provide adequate tools so that reports can be used from any authorized Node (client) on the network or any mobile devices with a web browser. This method of report generation would normally be performed by users that require 'ad hoc' reports.

The software shall provide form templates from any authorized Node (client) on the network.

Storage

For reports that are produced automatically, the software shall immediately store report files to the local or networked hard drive. A report naming convention shall be provided to link a report to a specific date or time of generation. Optionally, the reporting software shall automatically archive reports to a remote storage location.

The software will provide the option to transfer information from worksheets to a real time server. An application of this feature would be a "hand shake" with the process HMI or PLC.

The software will provide the option to transfer information from worksheets to an external relational database.

Report File Protection

The software shall protect reports from unauthorized modifications, while they are in the process of being completed, and after they are complete. Reports shall optionally be created with a built-in password protection, such that only authorized personnel can modify them.

The software will also provide the option to save reports in encrypted PDF format.

Report Printing

The software shall print completed reports to any specified network printer, in any configured page setup. Margins, headers, footers, pagination and orientation (i.e., landscape vs. portrait) shall be configurable for each report.

Report Publishing

The software shall be capable of saving reports as HTML files, for publication on a Web Server.

The software shall provide a web creation utility that will create a web site from reports that have been saved as web pages. The utility will not require any knowledge of HTML programming.

The software shall provide an emailing option that will email reports, either as attachments or embedded HTML pages. The list of recipients can be specified of retrieved from an existing database.

Emailing reports will be performed automatically (in the background) or on-demand.