

PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

LiMeDAS and DCU Emissions Monitoring Software

Produced by:

Limesoft Inc.

102-140 Fullarton Street
London, Ontario.
N6A 5P2
Canada

has been assessed by Sira Certification Service
and for the conditions stated on this certificate complies with:

**MCERTS Quality and Performance Standards for
Environmental Data Management Software
Version 4, dated December 2017**

In respect of:

Part A - Generic Software Quality

Part B - Data Management General Aspects

Part C1 – CEMS data management applications – Generic Requirements

Part C2 - CEMS Data Management Applications - EN14181 Requirements

Project No.: 16S30574 Add B / 80028603
Certificate No: Sira MC130242/01
Initial Certification: 24 December 2013
This Certificate issued: 08 January 2020
Renewal Date: 23 December 2023

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MCERTS is operated on behalf of the Environment Agency by

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 sira
CERTIFICATION

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Approved Site Application

Any potential user of the certified software should:

- 1) Ensure that it is suitable for the platform on which it will be installed (if necessary in consultation with the software producer)
- 2) Ensure that the selection and operation of the software is appropriate to the application

For general guidance on monitoring techniques refer to the Environment Agency Monitoring Technical Guidance Notes available at www.mcerts.net

Basis of Certification

This certification is based on the following Test Report(s) and on Sira’s assessment and ongoing surveillance of the product and the manufacturing process:

- Limesoft Inc MCERTS Assessment Report 16S30574 Add B, LiMeDAS and DCU Emissions Monitoring Software dated 1st October 2013
- Limesoft Inc MCERTS Surveillance Audit Report dated 15th October 2019

Product Certified

Product	Version	Remarks
LiMeDAS	1.5.0	Later minor changes to the certified version are permitted in accordance with the conditions of the standard.
DCU	1.5.8	Later minor changes to the certified version are permitted in accordance with the conditions of the standard.
LiMeDAS	2.0.1	Reviewed and found to be fully compliant at surveillance audit in 2019. Later minor changes to the certified version are permitted in accordance with the conditions of the standard.
DCU	1.8.1	Reviewed and found to be fully compliant at surveillance audit in 2019. Later minor changes to the certified version are permitted in accordance with the conditions of the standard.

Software Modifications

In the event of a major release the developer shall provide brief supporting evidence to the Certification Body who will advise whether recertification is necessary.

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The Scope of the Certified System

DCU v1.8.1 Modules and Components

The DCU software has six assemblies (modules) and uses two (2) third-party source code assemblies:

1. DCU.Backup - is a small utility application that is used for DCU database backups
2. DCU.Common – is a central component that is used by all other assemblies and holds DCU data definition and system interfaces.
3. DCU.Server – is the main executable that implements the DCU business model.
4. DCU.Client – is a stand-alone DCU GUI Client application
5. DCU.Configurator – a small utility application that is used for configuration deployment
6. DCU.Editor – is a standalone application used for configuration editing.
7. OPC1.Client – a plug-in assembly that implements an OPC DA Client used by the DCU to access the OPC Server devices.
8. DCU.Simulator – a standalone application that is used to pass simulated discrete and analogue values to the DCU to imitate hardware
9. The SCS assembly is a third-party component that implements a TCP-IP server-client communication framework and is used by the DCU.Client assembly to access the DCU.Server Windows Service from the local or remote machine.
10. The second third-party component is a nmodbus (assembly name is Modbus) library which implements the Modbus communication protocol.

LiMeDAS v2.0.1 Modules and Components

The LiMeDAS solution has about 15 assemblies that compile to produce five (5) top-level executable modules, and three utility applications. The solution has three installers to allow for “standalone” and “client-server” application deployment.

Application top-level executable modules

1. Limedas.Client – Main LiMeDAS Desktop Client application
2. Limedas.Controller – a Windows service application responsible for the calibration tracking and value write-backs.
3. Limedas.Client.Reports – LiMeDAS reporting module
4. Limedas.Client.EDR – a Windows desktop application that allows users to generate and submit electronic data reports to emission regulation authorities.
5. Limedas.Server – a Windows service application responsible for the remote client connections.

Utility applications

1. Limedas.Client.Backup – utility application to provide System Backup and Restore capabilities.
2. Limedas.Configuration.Editor – a standalone application used for configuration editing.

LiMeDAS Business Model Assemblies

The application business model is implemented in the following two assemblies:

Limedas.Server.Common – holds system configuration, calibration data and value processing classes, as well as licensing information and the interface to the formula engine.

Limedas.Processor – is responsible for the SQL database interface. It also implements the formula engine, to implement the processing of calculated values and aggregate value calculation.

Certified Performance

The applications are able to perform the following tasks:

Data Collection Unit:

- can interface a wide range of analysers and measurement equipment using Modbus, OPC and other communication protocols;
- can store data simultaneously into multiple databases to ensure high data availability and automatic data synchronization and replication;
- can be setup as a fully redundant system with no single point of failure;
- can run in industrial panel PCs featuring a touch-screen capable friendly user interface;
- can communicate to the plant DCS and exchange data with process data historian applications;
- complies with the requirements of EN-14181, and can be used to determine zero and reference point deviations for further AMS drift and precision analysis;
- can initiate and run analyser's calibration and drift check sequences
- can open and close solenoid gas valves, and determine calibration gas stability;
- has formula engine that allows analogue signal scaling, application of calibration and bias function coefficients, value normalization and correction to standard units, etc.
- can work as a virtual PLC or Modbus data gateway to acquire data from various sources using different protocols, and act as a Modbus Slave to serve data to multiple Modbus TCP-IP Masters.

Live Measurement Data Acquisition and Handling System:

- highly customizable solution that can be easily extended to monitor virtually any process, and meet a wide range of data analysis and reporting requirements;
- can acquire and process environmental data from data loggers and data historians;
- provides compliance with Industrial Emissions Directive 2010/75/EU ;
- provides compliance with data processing and reporting requirements of Joint Environmental Programme (JEP) IED compliance protocol for utility boilers and gas turbines;
- has all the capabilities required by the EN-14181 for carrying out QAL3 audits;
- can generate Control Charts of all types: CUSUM for drift and precision, Shewhart, and EWMA;
- allows setting of uncertainty values, bias and calibration function coefficients, computing normalized values, and validated averages, as well as tracking and reporting Emission Limit Value (ELV) exceedances and alarms;
- has data classification, value frequency distribution, monthly and annual mass emission reports that meet the requirements of German and Swiss emissions monitoring regulations and guidelines;
- has the capability to customize every report available in the system to meet custom reporting requirements;
- is available in multiple languages and is regional settings friendly.

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Description

Limesoft designs environmental data acquisition and handling software that meets emissions monitoring regulations.

Data Collection Unit (DCU) software is designed to interface AMS and peripheral hardware to continuously acquire and store environmental data. The DCU can connect to one or many devices simultaneously using a variety of communication protocols, over Ethernet or Serial network. It can also obtain data from many data sources (or stacks) simultaneously. Each separate stack runs on a separate DCU, using independent database which improves reliability while reducing costs. All raw data is stored and retained for the lifetime of the system. Having data collection performed by an independent software, separate from data reporting software, ensures robustness and security. Data visualization and analyses, as well as tasks such as adding new formulas and generating reports can be made to the system without affecting the data collection process.

Live Measurement Data Acquisition System (LiMeDAS) is a software application used for environmental data processing, handling, analyses and reporting. LiMeDAS obtains measurement data from a data historian or database, and performs data quality assessment and analyses in compliance with European and North American environmental regulation requirements. Currently the application has capabilities to meet applicable requirements of:

- Directive 2010/75/EU of the European Parliament And Of The Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control)
- Environmental Programme (JEP) IED compliance protocol for utility boilers and gas turbines;
- *US EPA CFR 40 Part 60, 63, 75, Title V;
- *Canada EPS 1/PG/7;
- *Alberta CEMS Code;
- *British Standards EN 14181 and EN 13284-2;
- *Kingdom of Saudi Arabia, Royal Commission Environmental Regulations (RCER)-2015;
- *Kingdom of Saudi Arabia, Presidency of Meteorology and Environment (PME) Environmental regulations;
- *and other

**All the standards in italics do not form part of this certification. They are included in the above list because the supplier claims conformity with them. The assessment report which supports this certificate does not cover the examination of any evidence to that supports these additional standards.*

Limesoft products ensure the highest level of quality control. Our platform can be integrated with unique hardware from various manufacturers, and can provide our customers with a lot of value regardless of whether the project is a brand-new installation or a system retrofit.

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General Notes

1. This certificate is based upon the equipment tested. The Manufacturer is responsible for ensuring that on-going production complies with the standard(s) and performance criteria defined in this Certificate. The Manufacturer is required to maintain an approved quality management system controlling the manufacture of the certified product. Both the product and the quality management system shall be subject to regular surveillance according to 'Regulations Applicable to the Holders of Sira Certificates'.
2. The design of the product certified is defined in the Sira Design Schedule V00 for certificate No. Sira MC130242/01
3. If certified product is found not to comply, Sira Certification Service should be notified immediately at the address shown on this certificate.
3. The Certification Marks that can be applied to the product or used in publicity material are defined in 'Regulations Applicable to the Holders of Sira Certificates'.
4. This document remains the property of Sira and shall be returned when requested by the company.

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