TÜV Rheinland Group

Automation, Software and Information Technology

ISaGRAF 5.0 assessment according to IEC 61131-3
ICS Triplex ISaGRAF Inc.
Canada

Report-No.: 968/EL 434.00/06
Date: 2006-11-02

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Pages:	6
Test object:	ISaGRAF 5.0
Customer/Manufacturer:	ICS Triplex ISaGRAF Inc. 9975 Avenue de Catania Local U Brossard, Quebec, J4Z 3V6 Canada
Order-No./Date:	P.O. No. 15036 dated 2005-12-06
Test Institute:	TÜV Rheinland Industrie Service GmbH Automation, Software and Information Technology (ASI) Am Grauen Stein D-51105 Köln
TÜV-Offer-No./Date:	JLAN-6CRKD9-0 dated 2005-05-26
TÜV-Order-No./Date:	3050399 dated 2006-01-31
Inspectors:	Dipl.-Ing. Matthias Haynl
Test location:	see Test Institute
Test duration:	January - November 2006

The test results are exclusively related to the test samples.

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1. **Scope**

Scope of the inspection was the compliance test for the programming software "ISaGRAF 5.0" of ICS Triplex ISaGRAF Inc. according to the standard IEC 61131-3.

2. **Applicable standards**

/N 1/ IEC 61131-3:2003
Programmable controllers - Part 3: Programming languages

3. **Object description**

The programming software "ISaGRAF 5.0" is a Microsoft Windows based development platform providing the five standard languages of IEC 61131-3, which are:

- Sequential Function Chart (SFC)
- Instruction List (IL)
- Structured Text (ST)
- Ladder Diagram (LD)
- Function Block (FB)

3.1. **Safety related aspect**

Specific safety related requirements were not applied to the "ISaGRAF 5.0" programming software.

3.2. **Inspected documents**

Testing was mainly based on the following documents:

/U 1/ ISaGRAF compliance list to IEC 61131-3 language features, dated 2005-06-15
ICS Triplex ISaGRAF Inc.

/U 2/ Test Plan ISaGRAF 5.0 - IEC 61131-3 Data types
ICS Triplex ISaGRAF Inc.

/U 3/ Test Plan ISaGRAF 5.0 SFC Editors
ICS Triplex ISaGRAF Inc.

/U 4/ ISaGRAF 5.0 - workbench, dated 2005-11
ICS Triplex ISaGRAF Inc.

4. **Performance of testing and test results**

Inspection of the ISaGRAF 5.0 were subdivided into an assessment of common elements, textural languages and graphic languages specified in /N 1/. The steps outlined below were performed as part of the assessment.

- Inspection of the user documentation
- Tests with the programming tool
- Inspection of the test results presented by the manufacturer and execution of random tests

Document containing details of the assessment was produced in the course of these individual test series. The document is stored at the Test Institute.

/D 1/   **Review results and random test, rev. 1.0, dated 2006-11-01**
          TÜV Rheinland Industrie Service GmbH

4.1.   Inspection to the requirements of IEC61131-3

4.1.1.   General requirements

The assessment of the general requirements in accordance with /N 1/ was done by inspection of the necessary software-, communication- and programming-models as well as the "Compliance Table" review mandatory required by /N 1/.

Result:

No major deviations were found to the requirements detailed in /N1/ for the general requirements.

4.1.2.   Common elements

The assessment of the compliance to the requirements of /N 1/ was done by reviewing the compliance list /U1/ and the test plans /U 2/ and /U 3/.

Result:

The reviewed documents and the performed tests have shown no obviously deviations according to the requirements of /N 1/ for the common elements listed in /U1/. This covers representation form in graphic (FB) and text (ST) for the common elements.

4.1.3.   Textural languages

The assessment of the Instruction List (IL) and Structured Text (ST) was done reviewing the compliance list /U1/ regarding the requirements of /N 1/ and the performance of random tests with the programming software.

Result:

No major deviations were found to the requirements detailed in /N1/ for the IL and ST languages elements listed in /U1/ by the performed tests and the reviewed documents.

4.1.4.   Graphic languages

The inspection of the graphic languages was done for the Ladder diagram (LD) by reviewing the compliance list /U1/ corresponding to the requirements of /N 1/ and the performance of random tests with the programming software.

Result:

No major deviations were found to the requirements detailed in /N1/ for the LD language elements listed in /U1/ by the performed tests and the reviewed documents.

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5. **Overall inspection results**

It was demonstrated, that the "ISaGRAF 5.0", complies with the requirements of IEC 61131-3 for the language elements listed in /U1/.

The "ISaGRAF 5.0" tool was not inspected regarding any safety related aspects.

Cologne, 2006-11-02
TIS/ASI/Kst. 968 hy-nie

The inspector

Dipl.-Ing. Matthias Haynl