

TECHNICAL REPORT

Design and installation of on-line analyser systems – Guide to technical enquiry and bid evaluation



THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2015 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

IEC Central Office
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00
info@iec.ch
www.iec.ch

About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigenda or an amendment might have been published.

IEC Catalogue - webstore.iec.ch/catalogue

The stand-alone application for consulting the entire bibliographical information on IEC International Standards, Technical Specifications, Technical Reports and other documents. Available for PC, Mac OS, Android Tablets and iPad.

IEC publications search - www.iec.ch/searchpub

The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee,...). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished

Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and also once a month by email.

Electropedia - www.electropedia.org

The world's leading online dictionary of electronic and electrical terms containing more than 30 000 terms and definitions in English and French, with equivalent terms in 15 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

IEC Glossary - std.iec.ch/glossary

More than 60 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

IEC Customer Service Centre - webstore.iec.ch/csc

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: csc@iec.ch.

TECHNICAL REPORT

Design and installation of on-line analyser systems – Guide to technical enquiry and bid evaluation

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 25.040.040; 71.040.40

ISBN 978-2-8322-2642-1

Warning! Make sure that you obtained this publication from an authorized distributor.

CONTENTS

FOREWORD	4
1 Scope	6
2 Normative references	6
3 Preliminary details	6
3.1 Brief project description	6
3.2 Type of response expected from the vendor	7
3.3 Critical criteria on bid rejection	7
4 Scope of supply	7
4.1 General	7
4.2 Vendor/client interfaces	7
4.3 Procurement responsibilities	7
4.4 Standards and codes of practice	8
4.5 Documentation requirements	8
4.5.1 Quotation stage	8
4.5.2 Project stage	8
4.5.3 Project completion	9
4.6 General specification	9
4.6.1 Environment	9
4.6.2 Hazardous area classification	9
4.6.3 Equipment certification	9
4.6.4 Utility systems	10
4.6.5 Labelling	10
4.7 Analyser house specification	10
4.7.1 Overall layout, size constraints and location	10
4.7.2 Construction	11
4.7.3 Ventilation	11
4.7.4 Air conditioning	11
4.7.5 Power distribution	12
4.7.6 Safety systems	12
4.7.7 Monitoring and alarm systems	12
4.7.8 Signal Interfacing with control systems	13
4.8 Sample system specifications	13
4.8.1 Sample probe design and location	13
4.8.2 Sample conditioning	13
4.8.3 Sample transport	14
4.8.4 Safety (pressure and temperature considerations)	14
4.8.5 Analyser validation	14
4.9 Analyser specification	14
4.9.1 Description, tag numbers and control	14
4.9.2 Systems vendor responsibilities	14
4.9.3 Data sheets	14
4.9.4 Analyser certification	15
4.9.5 Analyser performance requirements	15
4.9.6 Materials of construction	15
4.9.7 Signal interface requirements	15
4.10 Inspection and testing	15

4.10.1	Analysers at analyser vendor's works	15
4.10.2	Analysers and systems at systems vendor's works	16
4.10.3	Commissioning and site acceptance tests.....	17
4.11	Training requirements	17
4.12	Spare parts requirements	17
5	Bid technical evaluation	17
5.1	Object.....	17
5.2	Correct response to the bid	18
5.3	Technical excellence.....	18
5.4	Comparative testing	18
5.4.1	Allowance for technical interpretation	18
5.4.2	Assigning key areas.....	18
5.4.3	Weighting functions	19
5.5	Bid qualification meetings	20
5.6	Reassessment of comparative testing	20
6	Sample analyser specification template	22

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**DESIGN AND INSTALLATION OF ON-LINE ANALYSER SYSTEMS –
GUIDE TO TECHNICAL ENQUIRY AND BID EVALUATION**

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

The main task of IEC technical committees is to prepare International Standards. However, a technical committee may propose the publication of a technical report when it has collected data of a different kind from that which is normally published as an International Standard, for example "state of the art".

IEC Technical report IEC 61832 has been prepared by subcommittee 65B: Measurement and control devices, of IEC technical committee 65: Industrial-process measurement, control and automation.

EEMUA Publication 226 "Design and Installation of On-Line Analyser Systems; A Guide to Technical Enquiry and Bid Evaluation"¹ has served as a basis for the elaboration of this technical report.

This second edition cancels and replaces the first edition published in 1999. This edition constitutes a technical revision.

¹ This text is reproduced as an IEC Technical Report with the kind permission of EEMUA (The Engineering and Equipment Users Association – UK).

This edition includes the following significant technical changes with respect to the previous edition:

- a) Foreword: Foreword amended to indicate that this document covers the general principles but specific requirements must be developed for each project;
- b) Clause 1: Clarifications added to requirements for documentation and drawings required with bids;
- c) Clause 2: Further information added on technical information required with bids. Additional clauses added to specify training and spares information required with bids. Technical additions and clarifications made throughout to specific sub-clauses detailing technical information required with bids;
- d) Clause 3: Additional information and items added on key areas that need to be included in technical bid evaluations. Additional weighting factor added for engineering services;
- e) Annex A: Sample Analyser Specification Template replaced by a more comprehensive and detailed example.

This technical report is to be used in conjunction with IEC TR 61831, *On-line analyser systems – Guide to design and installation*.

The text of this standard is based on the following documents:

Enquiry draft	Report on voting
65B/960/DTR	65B/976/RVC

Full information on the voting for the approval of this technical report can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date

DESIGN AND INSTALLATION OF ON-LINE ANALYSER SYSTEMS – GUIDE TO TECHNICAL ENQUIRY AND BID EVALUATION

1 Scope

This technical report is intended as a guide to assist in the development of a specification or material requisition for analysers and their associated support systems. It is intended to be used for enquiry purposes and the subsequent assessment of the bids presented by the prospective vendors. The intention is to cover the general principles and items that need to be addressed when purchasing large analyser systems.

This technical report is not intended as a design specification in its own right and design guidance has been deliberately omitted. It is to be read in conjunction with IEC TR 61831, *On-line analyser systems – Guide to design and installation*, which provides further guidance on specific design details which need to be included in the specification or material requisition used for the purchase of analysers and associated systems.

To simplify the specification and bid process it is desirable to have a standard format for both the enquiry documentation and the response from the analyser vendor. This technical report is intended to provide that framework.

Clause 4, 'Scope of supply' lays out the headings and any relevant associated comments for the specification of a complete analyser system. Analyser systems are not all the same and individual requirements for total content will invariably differ. However this technical report is laid out such that individual clauses can be selected or omitted as required. The recommended approach is to include all clause headings and where relevant state as "Not Applicable".

Clause 5, 'Bid technical evaluation' covers procedures for bid assessment and gives suggested points against which bids should be analysed.

2 Normative references

IEC TR 61831:2011, *On-line analyser systems – Guide to design and installation*

3 Preliminary details

3.1 Brief project description

The specification document should contain a brief description of the project associated with the analyser installations including site location, type and number of analyser houses, tag numbers for the proposed houses and analysers, and the major obligations expected of the systems vendor, e.g. design work, manufacture, procurement, testing, transportation to site, commissioning and training.

The analyser and installation may be supplied by the same or separate vendors. The normal preference is for the analyser vendor to also supply the sample conditioning system and housing of the installation as this gives a single point of responsibility. If several analysers are being installed at the same time, the complete installation can be supplied by a specialised analyser systems sub-contractor. See IEC TR 61831, *On-line analyser systems – Guide to design and installation*, for further information on analyser installation design.