IEC PAS 63131

Edition 1.0 2017-11

PUBLICLY AVAILABLE SPECIFICATION

PRE-STANDARD

colour inside

System control diagram

IEC PAS 63131:2017-11(en)

IEC Central Office
3, rue de Varembé
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 It also gives information on projects, replaced and withdrawn publications.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 20 000 terms and definitions in English and French, with equivalent terms in 16 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

IEC Glossary - std.iec.ch/glossary
65 000 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.

IEC PAS 63131

Edition 1.0 2017-11

PUBLICLY AVAILABLE SPECIFICATION

PRE-STANDARD

colour inside

System control diagram

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 25.040.40; 75.200

ISBN 978-2-8322-4889-8

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

_____

SYSTEM CONTROL DIAGRAM

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.

A PAS is a technical specification not fulfilling the requirements for a standard, but made available to the public.

IEC PAS 63131 has been processed by IEC technical committee 65: Industrial-process measurement, control and automation.

Norsok I-005:2013/AC:2016 has served as a basis for the elaboration of this PAS. The structure and editorial rules used in this PAS reflect the practice of the organization which submitted it.

The text of this PAS is based on the following document:	This PAS was approved for publication by the P-members of the committee concerned as indicated in the following document
Draft PAS	**Report on voting**
65/669/DPAS	65/672/RVDPAS

Following publication of this PAS, which is a pre-standard publication, the technical committee or subcommittee concerned may transform it into an International Standard.

This PAS shall remain valid for an initial maximum period of 3 years starting from the publication date. The validity may be extended for a single period up to a maximum of 3 years, at the end of which it shall be published as another type of normative document, or shall be withdrawn.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

This PAS is based on Norsok I-005:2013/AC:2016. Edition 1 of Norsok I-005:2013/AC:2016 was issued in 1995 and it has been widely used in the Norwegian Oil and Gas industry since then together with some international use on FPSOs and other fixed Oil and Gas installations.

The main objective for this PAS is to define a limited set of complete operational control functions (objects) and an explanatory condensed logical diagram, suitable for use in the continuous control process industry – e.g. Oil and Gas processes.

The main drivers for establishing this as a standard are the advantage of efficient engineering, implementation, and commissioning, as well as reuse of the control application across different suppliers of control systems. The diagrams give an unambiguous logical representation that is suited for data transfer.

This PAS also includes a method of documenting sequences (ref. IEC 60848) and their interaction with the control objects.

This PAS will provide the means to fill the gap between the P&ID's and the Functional requirement diagrams. (Ref IEC 61804.) The control functions definitions include required behavior descriptions of control modes, interlocking (Safeguarding), blocking and other operator commands. It gives a standardized operator interface on a functional level.

The logic diagrams carry a simplified process sketch as background, inherited from PFD/P&ID's, which enables reviews of the control applications in a multi-discipline environment.

This PAS can also be used as basis for defining a companion standard to OPC-UA (IEC 62541).

NORSOK I-005:2013 Rev. 3 was adopted as NORSOK Standard in February 2013.

Annex A, B, D and F are normative. Annex C, E and G are informative.

The success of a plant development project depends on good and efficient means of communication between the involved parties, during all phases of the project.

Present extensive use of computerized systems and 3D modeling provide efficient tools for specifying and handling of physical equipment in a standardized manner. However, the development of methods and tools to specify functional relationships has not reached a corresponding level.

During the plant development the process engineers specify the process through the development of the P&IDs. Throughout this work process the process engineers acquire a thorough understanding of the total plant behaviour. However, the P&IDs provide limited facilities for documentation of the overall functionality as well as operational aspects of the plant.

It is the control system engineer's task to design the control system so as to fulfill the process functionality required to achieve product specifications as well as the requirements imposed by the overall operating and control philosophy and manning levels. To conserve the functional relationships implicitly specified by the P&IDs, the control system engineers have to transform the process engineers understanding of plant behaviour into the control system design and implementation.