BS EN 62708:2015

BSI Standards Publication

Document kinds for Electrical and Instrumentation Projects in the Process Industry

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National foreword

This British Standard is the UK implementation of EN 62708:2015. It is identical to IEC 62708:2015.

The UK participation in its preparation was entrusted to Technical Committee GEL/65, Measurement and control.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Compliance with a British Standard cannot confer immunity from legal obligations.

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EUROPEAN STANDARD

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English Version

Document kinds for Electrical and Instrumentation Projects in the Process Industry (IEC 62708:2015)

Types de documents pour les projets relatifs aux systèmes électriques et aux instruments de fonctionnement dans l'industrie de transformation (IEC 62708:2015)

Dokumente für die Elektro- und Leittechnik-Planung in Projekten der verfahrenstechnischen Industrie (IEC 62708:2015)

European Committee for Electrotechnical Standardization
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Europäisches Komitee für Elektrotechnische Normung

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Foreword

The text of document 65/580/FDIS, future edition 1 of IEC 62708, prepared by IEC TC 65 "Industrial-process measurement, control and automation" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62708:2015.

The following dates are fixed:

• latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2016-01-01
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2018-04-01

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

Endorsement notice

The text of the International Standard IEC 62708:2015 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

ISO 7200	NOTE	Harmonized as EN ISO 7200.
IEC 81346-1	NOTE	Harmonized as EN 81346-1.

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

Publication	Year	Title	EN/HD	Year
IEC 60079-10-1	-	Explosive atmospheres -- Part 10-1: Classification of areas - Explosive gas atmospheres	EN 60079-10-1	-
IEC 60079-11	-	Electrical apparatus for explosive gas atmospheres -- Part 11: Intrinsic safety "i"	-	-
IEC 60617	-	Standard data element types with associated classification scheme for electric components -- Part 4: IEC reference collection fo standard data element types and component classes	-	-
IEC 61082-1	-	Preparation of documents used in electrotechnology - Part 1: Rules	EN 61082-1	-
IEC 61131-3	-	Programmable controllers - Part 3: Programming languages	EN 61131-3	-
IEC 61355	series	Classification and designation of documents for plants, systems and equipment	EN 61355	series
IEC 61355-1	2008	Classification and designation of documents for plants, systems and equipment -- Part 1: Rules and classification tables	EN 61355-1	2008
IEC 61511	series	Functional safety - Safety instrumented systems for the process industry sector -- Part 2: Guidelines for the application of IEC 61511-1	EN 61511	series
IEC 61987-10	-	Industrial-process measurement and control - Data structures and elements in process equipment catalogues -- Part 10: Lists of properties (LOPs) for industrial-process measurement and control for electronic data exchange - Fundamentals	EN 61987-10	-
-	-		+AC	-
IEC 62337	-	Commissioning of electrical, instrumentation and control systems in the process industry - Specific phases and milestones	EN 62337	-
IEC 62381	-	Automation systems in the process industry - Factory acceptance test (FAT), site acceptance test (SAT) and site integration test (SIT)	EN 62381	-

IEC 62424	-	Representation of process control engineering - Requests in P&I diagrams and data exchange between P&ID tools and PCE-CAE tools	EN 62424	-
IEC 82079-1	-	Preparation of instructions for use - Structuring, content and presentation -- Part 1: General principles and detailed requirements	EN 82079-1	-
ISO 10006	-	Quality management systems_- Guidelines for quality management in projects	-	-
ISO 10628	-	Flow diagrams for process plants -- General rules	EN ISO 10628	-

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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DOCUMENT KINDS FOR ELECTRICAL AND INSTRUMENTATION PROJECTS IN THE PROCESS INDUSTRY

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.
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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.

International Standard IEC 62708 has been prepared by IEC technical committee 65: Industrial-process measurement, control and automation.

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

FDIS	Report on voting
65/580/FDIS	65/583/RVD

Full information on the voting for the approval of this standard 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 web site 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.

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

The engineering in the process industry is driven by international cooperation. Due to economic reasons, special know-how, special licence, authorization or simply capacity utilisation the work is split between partners. They will arrange their cooperation for each individual project differently. This requires well defined split of work and responsibilities. Documents are the basis for these definitions since they are the result of any engineering work.

If there is only the name of a document without further description of form and content, it will be likely that each partner develops their own view of the result of their efforts. Therefore, for each project the definition of deliverable documents is a major issue. The name of a document is often used for similar but in detail different documents. This standard will take the most commonly used name from synonymous names as the document kind name, intending to make other alternatives obsolete.

The first aim of this standard is to avoid misunderstandings and erroneous elaboration of documents in order to reduce additional corrective works and expenses for clarification between partners.

The second aim is to provide the convenience of document handling by using the IEC 61355 database. This standard will provide document kind names, document kind classification codes specified by IEC 61355, and some templates.

To cover these aims, we specify individual document kind names, but do not specify which documents are mandatory or optional.

DOCUMENT KINDS FOR ELECTRICAL AND INSTRUMENTATION PROJECTS IN THE PROCESS INDUSTRY

1 Scope

This International Standard defines specific documents and their basic content required for electrical and instrumentation projects in the process industry.

This standard specifies the document kind name and the mandatory content of the document kind.

Documents used in the phases of a project from the concept phase to the mechanical completion are covered (see IEC 62337).

Documents for project management and quality assurance are included.

Documents for commercial project administration are excluded.

Examples of documents are provided for easy reference, understanding and usage.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60617*, Graphical symbols for diagrams*

IEC 60079-10-1*, Explosive atmospheres – Part 10-1: Classification of areas – Explosive gas atmospheres*

IEC 60079-11*, Explosive atmospheres – Part 11: Equipment protection by intrinsic safety "i"*

IEC 61082-1, *Preparation of documents used in electrotechnology – Part 1: Rules*

IEC 61131-3*, Programmable controllers – Part 3: Programming languages*

IEC 61355 (all parts), *Classification and designation of documents for plants, systems and equipment*

IEC 61355-1:2008, *Classification and designation of documents for plants, systems and equipment – Part 1: Rules and classification tables*

IEC 61511 (all parts)*, Functional safety – Safety instrumented systems for the process industry sector*

IEC 61987-10, *Industrial-process measurement and control – Data structures and elements in process equipment catalogues – Part 10: Lists of properties (LOPs) for industrial-process measurement and control for electronic data exchange – Fundamentals*

IEC 62337, *Commissioning of electrical, instrumentation and control systems in the process industry – Specific phases and milestones*

IEC 62381*, Automation systems in the process industry – Factory acceptance test (FAT), site acceptance test (SAT), and site integration test (SIT)*

IEC 62424*, Representation of process control engineering – Requests in P&I diagrams and data exchange between P&ID tools and PCE-CAE tools*

IEC 82079-1*, Preparation of instructions for use – Structuring, content and presentation – Part 1: General principles and detailed requirements*

ISO 10006*, Quality management systems – Guidelines for quality management in projects*

ISO 10628*, Flow diagrams for process plants – General rules*

3 Terms, definitions, abbreviated terms and acronyms

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1.1
activity
smallest identified item of work in a project

[SOURCE: ISO 10006: 2003, 3.1]

3.1.2
document
fixed and structured amount of information intended for human perception that can be managed and interchanged as a unit between users and systems

[SOURCE: IEC 61355-1: 2008, 3.2, modified – notes removed for easy understanding.]

3.1.3
document kind
type of document defined with respect to its specified content of information and form of presentation

[SOURCE: IEC 61355-1: 2008, 3.6, modified – note removed for easy understanding.]

3.1.4
document request
document which requests to prepare or provide a set of documents

3.1.5
documentation
collection of documents related to a given subject

[SOURCE: IEC 61355-1: 2008, 3.5, modified – notes removed for easy understanding.]

3.1.6
export permission
authority permission to transport e.g. embargo goods from the country of origin to its intended country of destination

3.1.7
identifier
attribute associated with an object to unambiguously distinguish it from other objects within a specified domain

[SOURCE: IEC/ISO 81346-1: 2009, 3.10]

3.1.8
process industry
industry that uses chemical reactions, separations, or mixing techniques in order to create new products, modify existing products or treat waste and includes the following types of industries: chemical, petrochemical, waste treatment, paper, cement, etc. It does not include such industries as equipment/machine manufacturing or similar industries. Industries which are subject to special requirements and or validation, etc. are also not included

[SOURCE: IEC 62337: 2012, 3.13]

3.1.9
project
sum of commercial, technical and other activities related to a specific object

[SOURCE: IEC 61355-1: 2008, 3.12 modified – definition adapted to comply with the ISO/IEC Directives, Part 2.]

3.1.10
work package
subset of a project forming a group of activities having common characteristics such as purpose, theme, object, responsible, time frame, etc.

3.2 Abbreviated terms and acronyms

DCS	Distributed control system
DLOP	Device list of properties
E&I	Electrical and instrumentation
ESD	Emergency shutdown system
Ex-i	Instrinsic safety "i" according to IEC 60079-11
FAT	Factory acceptance test
I/O	Input/output
ID	Identifier
IT	Information technology
OLOP	Operating list of properties
P&ID	Piping and instrumentation diagram
PLC	Programmable logic controller
SAT	Site acceptance test
SIF	Safety instrumented function
SIL	Safety integrity level
SIS	Safety instrumented system
SIT	Site integration test
SRS	Safety requirement specification

4 Conformity

4.1 Document

Conformance of a document with this international standard may be declared if the following is fulfilled:

The document kind name shall be indicated on the respective document. If the document contains more than one page, the document kind name may be shown on the cover sheet only. The document kind name defined in this standard shall be used.

In addition, a reference to this international standard shall be made in close relation with the usage. A footnote or endnote may be used for this purpose.

Furthermore the final document shall contain all mandatory contents defined in this international standard as a minimum. If data is not or not completely available at the point of time the document is issued, the document may claim conformity with this standard if the missing information is clearly marked as to be given later. A general note declaring the document as being in progress may be used.

4.2 Document request

Conformance of a document request with this international standard may be declared if the following is fulfilled:

The document kind name defined in this standard shall be used.

In addition, a reference to this international standard shall be made in close relation with the usage. A footnote or endnote may be used for this purpose.

5 Document kinds

Table 1 lists document kinds with their properties listed below.

- “Document kind name” indicates the name of the document kind.
- “Description" is the short description of the kind of information to be provided by the document kind.
- "Mandatory content” indicates mandatory information included in the document kind.
- “DCC” indicates a document kind classification code of the document kinds according to IEC 61355-1. The document kind classification code shown is informative only since IEC 61355 may leave other classifications open to the user.
- "Identifier" is a number which together with the DCC is used within this standard to reference the items.
- "Example" shows where an example can be accessed.

Table 1 – Document kinds *(1 of 12)*

Document kind name	Description	Mandatory content	DCC (informative)	Identifier	Example
List of documents	Formal list of content of a document package or a documentation.	- Drawing / document number - Number of sheets - Revision index - Document designation code - Title of document	AB	001	Figure B.1
Punch list	List of all open tasks.	- Task ID - Task description - Task owner - Due date - Priority - Status	BB	001	Figure B.2
Work breakdown structure (WBS)	Structured list of major work packages. It has a tree structure which covers all works required to perform the projects scope and includes all deliverables. The use is described in ISO 10006.	See ISO 10006	BD	001	
Communication plan	Binding agreement regarding permitted ways of information and partners including rules for content and frequency. For further details see ISO 10006.	See ISO 10006	BD	002	
Project execution plan	Execution plan to confirm the project over all scope.	- Scope - Schedule - Documents lists - Organization - Communication plan	BD	003	
Manpower mobilization plan	Bar chart schedule with associated personnel resources and qualifications. For further details of resource planning see ISO 10006.	See ISO 10006 - Name of resource - Resources related to time	BE	001	Figure B.3
Time schedule	Representation of start and end dates of activities from work breakdown structure and main milestones according to IEC 62337.	- Defined activity - Division of activities into sub-activities, if required (e.g. preliminary studies, engineering, manufacturing, testing, dispatch, erection, commissioning, etc.) - Start and end dates for each activity	BE	002	
Equipment list with export restriction	List of equipment requiring export permission.	- Type of equipment - Reference to applicable export restriction	BF	001	

Table 1 *(2 of 12)*

Document kind name	Description	Mandatory content	DCC (informative)	Identifier	Example
Instrument data sheet	Data sheet with data for an instrument loop required for operation and maintenance. The document is typically used to transfer data between the different phases of the whole life-cycle.	- ID - Function - Description - Measuring range - Location - Process data - Instrument data	DA	001	Figure B.4
Identification system	Coding system for objects within a complex or plant.	- Scope of identification system - Coding rules	DB	001	
Test and maintenance recommendations	List of recommended test and maintenance activities.	- Description of recommended activities - Affected objects - Frequency	DC	001	Figure B.5
Operating manual	Manufacturer's instruction for the intended handling and using of a device or system according to IEC 82079-1.	See IEC 82079-1	DC	002	
Test and maintenance requirements	List of legally required or necessary test and maintenance works.	- Description of required activities - Affected objects - Frequency - Designation and title of applicable law or regulation	DZ	001	Figure B.6
General design requirements	Mandatory design rules adapted from project specific requirements as well as from relevant legal requirements and regulations.	- Scope - Description of rules - Designation and title of applicable law or regulation	EC	001	
Electrical consumer list	Tabulated list with all electrical consumers.	- Load ID - Load type (i.e. motor, etc.) - Description - Rated power - Rated current - Rated voltage	EC	002	Figure B.7
Lighting concept	Lighting design guide in compliance with applicable rules and standards paying attention to the safety concept. Typically the concept is further detailed than the general design requirements.	- Scope - Designation and title of applicable law or regulation - Design rules for lighting	EC	003	

Table 1 *(3 of 12)*

Document kind name	Description	Mandatory content	DCC (informative)	Identifier	Example
Concept for communication equipment	Design guide in compliance with applicable rules and standards for electrical systems such as: - warning system - fire alarm system - alarm and signaling system - general communication systems - IT systems - security systems - video surveillance systems etc. Typically the concept is further detailed than the general design requirements.	- Scope - Designation and title of applicable law or regulation - Design rules for communication equipment	EC	004	
Lightning protection, grounding and equipotential bonding concept	Design guide in compliance with applicable rules and standards for the design of lightning protection, grounding and equipotential bonding taking the local conditions into account. Typically the concept is further detailed than the general design requirements.	- Scope - Designation and title of applicable law or regulation - Design rules for lightning protection, grounding and equipotential bonding	EC	005	
Cathodic corrosion protection concept	Design guide in compliance with applicable rules and standards for the design of a cathodic corrosion protection system taking the local conditions into account. Typically the concept is further detailed than the general design requirements.	- Scope - Designation and title of applicable law or regulation - Design rules for cathodic corrosion protection	EC	006	
Electrical heat tracing concept	Design guide in compliance with applicable rules and standards for the design of an electrical heat tracing system taking the local conditions into account. Typically the concept is further detailed than the general design requirements.	- Scope - Designation and title of applicable law or regulation - Design rules for electrical heat tracing	EC	007	
Heating circuit list	List of all heating circuits.	- ID - Heated equipment - Heating cable type - Maintenance temperature - Starting point - Length - Power	EC	008	Figure B.8

Table 1 *(4 of 12)*

Document kind name	Description	Mandatory content	DCC (informative)	Identifier	Example
Requirement specification	This document includes the necessary requirements of E&I equipment describing the task, the operational conditions and additional information as for example using a subset of the operating list of properties (OLOP) according to IEC 61987-10. It is typically the user's technical input to the purchasing process.	See IEC 61987-10 - Base conditions - Process case - Operating conditions for device design - Process equipment - Location	EC	009	Figure B.9
Specification sheet	This data sheet includes data describing a particular implementation of the E&I equipment specified by the requirement specification, as for example using a subset of the device list of properties (DLOP) according IEC 61987-10. It is typically the common basis of the user and manufacturer for the purchasing process and contains the manufacturer's technical input from the offer. The information out of the requirement specification can be indicated.	See IEC 61987-10 - ID - Application - Function and system design - Input - Output - Digital communication - Performance - Rated operating conditions - Mechanical and electrical construction - Operability - Power supply - Certificates and approval - Component part ID	EC	010	Figure B.10
Loop list	Tabulated list of all E&I IDs.	- ID - Function - P&ID reference	EC	011	Figure B.11
Technical specification	Complete description of all requirements for the realization (e.g. of an automation system).	- Scope - Requirements	EC	012	
Test specification	Definition of test purpose, extent and execution.	- Scope - Related documentation - Function to be tested - Test environment - Test result documentation - Test procedure	EC	013	
Construction bill of quantities	List of required works for complete erection of a system, plant or unit including expected quantity.	- Scope - Required works - Quantities	EC	014	Figure B.12

Table 1 *(5 of 12)*

Document kind name	Description	Mandatory content	DCC (informative)	Identifier	Example
Specification E&I process connections	Definition of nozzle design for various applications (pressure, temperature, level, etc.).	- Nozzle design	EC	015	Figure B.13
User requirement specification	Rough user specification in view of the customer, to be detailed by the technical specification.	- Scope - User requirements	EC	016	
Safety requirement specification (SRS)	Requirements for SIF design according to IEC 61511.	See IEC 61511	EC (alt. QB)	017	
Power supply system study	Impact analysis for the power distribution due to a short circuit. Additional studies could be supplemented (load flow, motor start, harmonics, selectivity, settings of protection devices, etc.).	- Scope - Short circuit location assumed - Impact	ED	001	
Cable sizing calculation	Cable sizing calculation of cables considering laying requirements, ambient conditions, and network topology for the specified operating conditions.	- Scope of calculation - Requirements - Topology - Ambient conditions assumed - Result of calculation	ED	002	
Illuminance calculation	Lighting system design calculation taking local conditions into account.	- Scope of calculation - Requirements - Local conditions assumed	ED	003	
Calculation of the cathodic corrosion protection system	Design calculation of the cathodic corrosion protection system taking the local conditions into account.	- Scope of calculation - Requirements - Ambient conditions assumed - Result of calculation	ED	004	
Calculation of the electrical heat tracing	Design calculation of the electrical heat tracing taking into account ambient conditions and the system topology.	- Scope of calculation - Requirements - Topology - Ambient conditions assumed - Result of calculation	ED	005	
Ex-i calculation sheet	Calculation verifying that within a circuit with type of protection Ex-i all apparatuses are operated within their certified values.	- Scope of calculation - Requirements - Topology - Ambient conditions assumed - Result of calculation	ED	006	Figure B.14

Table 1 *(6 of 12)*

Document kind name	Description	Mandatory content	DCC (informative)	Identifier	Example
Heat dissipation summary	Heat dissipation summary of electrical equipment in switch, rack and control room.	- Scope - Target system - Location - Grouping - Heat dissipation	ED	007	Figure B.15
Electrical single line diagram	Simplified schematic drawing of power distribution with graphic symbols and circuits – not showing any control wiring.	- Scope of drawing - Symbols and IDs of power source - Symbols and IDs of power consumer - Symbols and IDs of power circuits	FA	001	Figure B.16
Structure diagram DCS/PLC/SIS	Simplified schematic drawing of control systems and their network topology by graphical symbols – not showing any secondary wiring.	- Scope of drawing - Symbols and IDs of subsystem - Symbols and IDs of interconnection	FA	002	Figure B.17
Piping and instrumentation diagram (P&ID)	Diagram according to ISO 10628 including plant process equipment and connecting piping. E&I equipment shown according project specific requirements and IEC 62424.	See ISO 10628	FB	001	Figure B.18
Process flow diagram	Diagram according to ISO 10628 including plant process equipment and important connecting piping. Important E&I equipment shown according project specific requirements.	See ISO 10628	FB	002	
HMI specification	This specification contains detailed graphic standards and hierarchy of the human machine interface e.g. group-, trend-, alarm- and operator display.	- Scope of specification - ID of target HMI system - Designation and specifications of display screen - Hierarchy of display screens	FC	001	
Function description	Verbal description of task, function, operator interface and operation of closed control loop or open loop control like sequence, batch control and interlocks.	- Scope of description - Target - Functional descriptions	FE	001	Figure B.19

Table 1 *(7 of 12)*

Document kind name	Description	Mandatory content	DCC (informative)	Identifier	Example
Function block diagram	Graphical description of closed or open control loops following rules as e.g. given in IEC 61131-3 function block diagram with symbols according to IEC 60617.	- Graphical symbols for objects representing functions - Graphical symbols representing functional connections or interrelations - Interface terminals and designations - Signal designations	FF	001	Figure B.20
Cause and effect matrix	Actuators and sensors assigned to columns and rows according to their function, including their related switching and/or alarm function.	- Scope of document - Cause ID (inputs) - Effect ID (outputs) - Referenced documents - Description - Safety requirements - Relation between causes and effects	FF	002	Figure B.21
Signal list	List of all signals. See IEC 61082-1.	- ID - Description - Source - Target - Type	FP	001	Figure B.22
I/O list	Extract of all signals from or to an automation system out of the signal list.	- ID - Input or output designation	FP	002	Figure B.23
Trip point list	Tabulated list of all process values resulting in a switching function of E&I equipment.	- ID of process value - Condition to trip	FQ	001	Figure B.24
Configuration parameter list	Tabulated list of all variable parameter for E&I equipment.	- ID of equipment - ID of parameters - Value for parameter	FQ	002	Figure B.25

Table 1 *(8 of 12)*

Document kind name	Description	Mandatory content	DCC (informative)	Identifier	Example
Circuit diagram	Schematic drawing of current path without consideration of spatial and mechanical position of the electrical equipment. See IEC 61082-1.	- Graphical symbols representing the objects - Graphical symbols representing the connections among objects - Reference designations - Terminal designations - Signal level conventions (applicable to logic signals) - Information necessary to trace paths and circuits (signal designations, location) - Supplementary information necessary for the understanding of functions	FS	001	
Loop diagram	Representation of hardware and/or software functions of a control loop with graphical symbols according to IEC 60617. It shows equipment in its topological order and wiring including the terminals.	- ID of loop - Symbols according to IEC 60617	FS	002	Figure B.26
Bus layout drawing	Representation of all bus participants including their communication address and relation.	- ID of bus - ID of bus participant - Their address - Relation between participant	FS	003	Figure B.27
Main cable tray layout	Arrangement drawing showing the major cable trays in the plot plan.	- ID of cable tray - Location	LD (alt. LH)	001	
Cable route section	List of cables at a defined point along a cable route.	- Location - List of cable ID	LD (alt. LH)	002	
Plot plan E&I	Presentation of the locations of E&I equipment in the plot plan.	- ID of equipment - Location	LD (alt. LH)	003	Figure B.28
Instrument air supply plot plan	Layout of main instrument air pipes and equipment in the plot plan.	- ID of equipment - Location - Representation of air pipes	LD (alt. LH)	004	
Plot plan	Graphic representation of major equipment and structures in a given area in a top view drawing to scale. At least outlines of these equipments are shown. Other views may be added.	- ID and representation of equipment or structure - Outline of equipment and structure - Location	LD (alt. LH)	005	

Table 1 *(9 of 12)*

Document kind name	Description	Mandatory content	DCC (informative)	Identifier	Example
Arrangement drawing	Construction document for lighting, earthing, lightning protection, cathodic protection, heat tracing, cable trays, etc. The drawing contains the location of individual components or group of components and its designation with the required level of detail for the erection.	- Scope of drawing - ID and representation of component or group of components - Their representation - Location	LD (alt. LH)	006	Figure B.29
Allocation plan wall bushing	Survey of all cable bulkheads, which contains:	- Cable ID - Position	LH	001	
Cabinet layout drawing	Drawing to scale of equipment, terminal strips, cable trays, etc., in cabinets, consoles and similar equipment.	- ID of cabinet, console or similar equipment - ID and representation of components in the cabinet - Position of component	LU	001	Figure B.30
Allocation plan	Allocation of objects defining the usage of the object's resources with declaration of object resource and identification of resource consumer (e.g. signal allocation of an multichannel I/O card).	- ID of object - Object’s resource - Declaration of object resource - Resource consumer	LU	002	
Terminal connection diagram	Schematic representation of terminal strips including designation of all connected wires, cables and jumper for each terminal.	- ID of the connected objects	MA	001	Figure B.31
Cross wiring diagram	Terminal diagram of incoming and outgoing terminals typically of a marshalling cabinet including their cross wiring connections.	- Scope of document - Incoming signal - Outgoing signal - Corresponding terminal ID	MA	002	
Conceptual wiring diagram	Conceptual wiring diagram of instruments, system components and their auxiliary power supplies. Drawing shows equipment, location of all terminals and type of connection between terminals for all type of signals.	- Graphical symbols according to IEC 60617 or defined project specific, representing E&I components - E&I component interconnections	MA	003	Figure B.32
Cable list	List of all electrical cables.	- Cable ID - Cable type - Cable cross section - Starting point - End point - Length	MB	001	Figure B.33

Table 1 *(10 of 12)*

Document kind name	Description	Mandatory content	DCC (informative)	Identifier	Example
Cable laying list	Tabulated list containing the starting point, the cable route sections and the end point in the course of a cable.	- Cable ID - Cable starting point - Cable route section - Cable end point	MB	002	Figure B.34
Material take off	Specification and quantity for bulk material.	- Name of material - Its specification - Its quantity	PA	001	Figure B.35
Spare parts list	List of recommended spare parts for a specific purpose or period with all required details for procurement.	- Item reference number - Quantity - ID of the spare part - Name of manufacturer or supplier of the spare part - Part name	PB	001	Figure B.36
Instrument index	Tabulated list of all instruments per ID.	- ID - Instrument type - Labelling	PB	002	Figure B.37
System log book	Detailed list of all hardware and software releases of a system.	- ID of hardware - Its revision of software	PD	001	Figure B.38
Quality plan	Description of basic processes within the projects phases securing the contractual requirements regarding product quality, health, safety and environment.	See ISO 9000:2005	QA	001	
Test plan	Overview of tests as provided in the contract.	- Scope of test - Purpose - Target - Related document	QA	002	
List of deficiencies	List of faulty characteristics or incomplete performed tests which are finally unremedied.	- Scope of document - Faulty characteristics or incomplete performed tests	QA	003	
Check list	List of all tests.	- Scope of document - List of all tests	QA	004	
Hazardous area classification drawing	Plan showing hazardous areas and the related equipment according to IEC 60079-10-1.	- Location - Classification of areas - Related equipment - Dimensions	QB	001	

Table 1 *(11 of 12)*

Document kind name	Description	Mandatory content	DCC (informative)	Identifier	Example
Safety concept for power supply	Definition of preventive measures for persons, electrical equipment and plant availability.	- ID of preventive measures - Purpose - Procedure	QB	002	
SIL classification	SIL classification according to IEC 61511.	- Scope of document - Loop ID - SIL classification	QB	003	
Material safety data sheet (MSDS)	Details of used chemical media including ID, name and main physical and chemical properties.	- ID of material - Name of material class - Properties - Location - Quantity	QB	004	
Certificate	Proof and certificate for type specific or individual properties of supplied devices or systems.	- Designation of target device, system, or project - Type of target - Designation and title of applicable law or regulation - Approval of issuer	QC	001	
Test report	Document verifying tested characteristics of a certain object.	- Date of testing - Signature of person responsible for test - Object ID (type, series number, etc.) - Measured values	QC	002	
Acceptance documentation	Certificate of FAT, SAT or SIT according to IEC 62381.	- Certificate according to IEC 62381	QC	003	
Test sheet for SIF	Specification of required tests and confirmation of correct completion.	- Scope of document - Designation of test plan document - Punch list	QC	004	
SIL verification	Verification that the required SIL classification is achieved.	- Scope of document - Loop ID - SIL classification - Information of verification	QC	005	

Table 1 *(12 of 12)*

Document kind name	Description	Mandatory content	DCC (informative)	Identifier	Example
Installation drawing (hook-up)	Schematic drawing and basic construction details for the installation of E&I equipment with all interconnections and required bill of materials.	- Scope of document - ID and symbol of E&I equipment - Representation of interconnection - Part list	TC	001	Figure B.39
Assembly drawing	Drawing with main dimensions and connecting details.	- Dimensions - Arrangement - Method of assembly	TC	002	Figure B.40

Annex A
(informative)

Names of document kinds in different languages

Table A.1 and Table A.2 show the names of document kinds in different languages.

Table A.1 – Names of document kinds in English and French *(1 of 4)*

Document kind	Type de document	DCC	Identifier
List of documents	Liste des documents	AB	001
Punch list	Liste des points résiduels	BB	001
Work breakdown structure (WBS)	Plan structurel des projets	BD	001
Communication plan	Plan de la communication	BD	002
Project execution plan	Plan d'exécution du projet	BD	003
Manpower mobilization plan	Planning du personnel	BE	001
Time schedule	Agenda	BE	002
Equipment list with export restriction	Liste de l'équipement avec les interdictions d´export	BF	001
Instrument data sheet	Feuille de postes PLT	DA	001
Identification system	Système d'étiquetage	DB	001
Test and maintenance recommendations	Instruction d'essai et d'entretien	DC	001
Operating manual	Manuel d'utilisation	DC	002
Test and maintenance requirements	Règlement d'essai et d'entretien	DZ	001
General design requirements	Spécification générale pour l´ingénierie	EC	001
Electrical consumer list	Liste des consommateurs électriques	EC	002
Lighting concept	Concept d'éclairage	EC	003
Concept for communication equipment	Concept de communication de l'équipement	EC	004
Lightning protection, grounding and equipotential bonding concept	Concept de protection contre la foudre, la mise à la terre et le câblage des équipotentiels	EC	005
Cathodic corrosion protection concept	Concept de protection anticorrosion cathodique	EC	006
Electrical heat tracing concept	Concept pour le chauffage électrique et la tuyauterie des appareils	EC	007
Heating circuit list	Liste des circuits de chauffage	EC	008

Table A.1 *(2 of 4)*

Document kind	Type de document	DCC	Identifier
Requirement specification	Spécification des exigences	EC	009
Specification sheet	Spécification de l´équipement	EC	010
Loop list	Liste de postes PLT	EC	011
Technical specification	Cahier des charges	EC	012
Test specification	Spécification de contrôle	EC	013
Construction bill of quantities	Cahier des charges du montage	EC	014
Specification E&I process connections	Spécification des connexions des processus PLT	EC	015
User requirement specification	Cahier des charges	EC	016
Safety requirement specification (SRS)	Spécification des demandes de sécurité	EC	017
Power supply system study	Etude du réseau électrique	ED	001
Cable sizing calculation	Calcul de dimension des câbles	ED	002
Illuminance calculation	Calcul de l'éclairage	ED	003
Calculation of the cathodic corrosion protection system	Calcul de la protection anticorrosion cathodique	ED	004
Calculation of the electrical heat tracing	Calcul du chauffage électrique et de la tuyauterie des appareils	ED	005
Ex-i calculation sheet	Feuille de calcul Ex-i	ED	006
Heat dissipation summary	Inventaire des pertes de chaleur	ED	007
Electrical single line diagram	Schéma unifilaire de la distribution de l'énergie	FA	001
Structure diagram DCS/PLC/SIS	Schéma de structure SNCC, API	FA	002
Piping and instrumentation diagram (P&ID)	Schéma instruments de fonctionnement et des conduites (schéma de fonctionnement R&I)	FB	001
Process flow diagram	Schéma des procédés	FB	002
HMI specification	Spécification de l'interface utilisateur	FC	001
Function description	Description des fonctions	FE	001
Function block diagram	Diagramme fonctionnel	FF	001
Cause & effect matrix	Tableau cause-effet	FF	002
Signal list	Liste des signaux	FP	001
I/O list	Liste des E/S	FP	002
Trip point list	Liste des points de déclenchement	FQ	001

Table A.1 *(3 of 4)*

Document kind	Type de document	DCC	Identifier
Configuration parameter list	Liste des paramètres de configuration	FQ	002
Circuit diagram	Schéma électrique	FS	001
Loop diagram	Schéma des boucles	FS	002
Bus layout drawing	Plan des bus	FS	003
Main cable tray layout	Vue synoptique: cheminement des câbles	LD	001
Cable route section	Tracé du cheminement du câble	LD	002
Plot plan E&I	Plan local E&I	LD	003
Instrument air supply plot plan	Plan de l'alimentation en air des instruments	LD	004
Plot plan	Plan de mise sur pied	LD	005
Arrangement drawing	Plan d'installation	LD	006
Allocation plan wall bushing	Plan du passage des câbles	LH	001
Cabinet layout drawing	Schéma de l´armoire	LU	001
Allocation plan	Schéma des dispositions	LU	002
Terminal connection diagram	Schéma des bornes	MA	001
Cross wiring diagram	Schéma croisé du câblage	MA	002
Conceptual wiring diagram	Plan de conception du câblage	MA	003
Cable list	Liste des câbles	MB	001
Cable laying list	Schéma du tracé des câbles	MB	002
Material take off	Bordereau des matériaux	PA	001
Spare parts list	Liste des pièces détachées	PB	001
Instrument index	Liste d'appareils PLT	PB	002
System log book	Journal de bord du système	PD	001
Quality plan	Plan qualité	QA	001
Test plan	Plan d'essai	QA	002
List of deficiencies	Liste des manquants	QA	003
Check list	Liste d'essai	QA	004
Hazardous area classification drawing	Plan de classification des zones dangereuses	QB	001
Safety concept for power supply	Concept des protections de l´alimentation	QB	002
SIL classification	Classification SIL	QB	003
Material safety data sheet (MSDS)	Fiche technique de sécurité	QB	004
Certificate	Certificat	QC	001
Test report	Procès-verbal d'essai	QC	002

Table A.1 *(4 of 4)*

Document kind	Type de document	DCC	Identifier
Acceptance documentation	Documentation de réception	QC	003
Test sheet for SIF	Feuille d'essai pour appareillages de protection	QC	004
SIL verification	Contrôle SIL	QC	005
Installation drawing (hook-up)	Schéma du montage	TC	001
Assembly drawing	Dessin de montage	TC	002

Table A.2 – Names of document kinds in Chinese and German *(1 of 3)*

文件种类	Dokumentenart	DCC	Identifier
文件列表	Dokumentenliste	AB	001
剩余工作清单	Restpunktliste	BB	001
工作分解结构	Projektstrukturplan	BD	001
沟通计划	Kommunikationsplan	BD	002
项目实施计划	Projektabwicklungsplan	BD	003
人力动员计划	Personaleinsatzplan	BE	001
时间表	Terminplan	BE	002
限制出口设备清单	Liste ausfuhrkritischer Ausrüstungen	BF	001
仪表数据表	PLT-Stellenblatt	DA	001
标识系统 标识制	Kennzeichnungssystem	DB	001
测试与维护建议	Prüf- und Wartungsanleitung	DC	001
使用说明书	Betriebsanleitung	DC	002
测试与维护要求	Prüf- und Wartungsvorschrift	DZ	001
总体设计要求	Allgemeine Engineeringspezifikation	EC	001
电气易耗品表	Liste elektrischer Verbraucher	EC	002
照明概念设计大纲	Beleuchtungskonzept	EC	003
通信设备概念设计大纲	Konzept für Kommunikationseinrichtungen	EC	004
防雷、接地与等电位连接概念设计大纲	Konzept Blitzschutz, Erdung und Potentialausgleich	EC	005
阴极腐蚀防护概念设计大纲	Konzept kathodischer Korrosionsschutz	EC	006
电伴热概念设计大纲	Konzept elektrische Begleitheizung	EC	007
加热电路列表	Heizkreisliste	EC	008
要求规范 需求规范	Anforderungs Spezifikation	EC	009
规范明细表	Geräte Spezifikation	EC	010
回路列表	PLT-Stellenliste	EC	011
技术规范	Pflichtenheft	EC	012
测试规范	Prüfspezifikation	EC	013

Table A.2 *(2 of 3)*

文件种类	Dokumentenart	DCC	Identifier
建设工程量清单	Montage Leistungsverzeichnis	EC	014
E&I过程连接规范	Spezifikation PLT Prozessanschlüsse	EC	015
用户要求规范	Lastenheft	EC	016
安全要求规范（SRS）	Spezifikation der Sicherheitsanforderungen	EC	017
供电系统研究	Netzberechnung Energieversorgung	ED	001
电缆选型计算	Berechnung der Kabel Dimensionierung	ED	002
照度计算	Berechnung der Beleuchtungsstärke	ED	003
阴极腐蚀防护系统计算	Berechnung kath. Korrosionsschutzanlage	ED	004
电伴热计算	Berechnung elektrischer Begleitheizung	ED	005
Ex-i计算表	Ex-i Berechnung	ED	006
热耗散汇总表	Zusammenstellung der Wärmeverluste	ED	007
电气单线图	Übersichtsschaltplan der Energieversorgung	FA	001
DCS/PLC/SIS结构图	Strukturdiagramm PLS/SPS/ESD	FA	002
管道仪表流程图（P&ID）	Rohrleitungs- und Instrumentenfließbild (R&I-Fließbild)	FB	001
工艺流程图	Verfahrensfließbild	FB	002
HMI规范	Spezifikation Bedien- und Beobachtungsoberfläche	FC	001
功能描述	Funktionsbeschreibung	FE	001
功能块图	Funktionsplan	FF	001
因果矩阵	Ursache-Wirkungs Tabelle	FF	002
信号明细表	Signalliste	FP	001
I/O明细表	E/A-Liste	FP	002
触发点明细表	Grenzwertliste	FQ	001
配置参数明细表	Parameterliste	FQ	002
线路图	Stromlaufplan	FS	001
回路图	PLT-Stellenplan	FS	002
总线配线图	Bus Strukturplan	FS	003
主电缆槽布置图	Kabeltrassen Übersichtsplan	LD	001
分段电缆部件表	Kabeltrassenschnitt	LD	002
E&I总图?	Lageplan PLT	LD	003
仪表气源配置图	Lageplan Instrumenten Luftversorgung	LD	004
总图	Aufstellungsplan	LD	005
布置图	Installationsplan	LD	006

Table A.2 *(3 of 3)*

文件种类	Dokumentenart	DCC	Identifier
穿墙套管配置方案	Belegungsplan Kabel-Wanddurchführung	LH	001
机柜布置图	Schrankaufbauplan	LU	001
配置方案	Belegungsplan	LU	002
端子接线图	Anschlussplan	MA	001
交叉布线图	Rangierplan	MA	002
接线示意图	Strukturplan der Verdrahtung	MA	003
电缆明细表	Kabelliste	MB	001
电缆敷设明细表	Kabelzugliste	MB	002
材料统计	Materialauszug	PA	001
备件清单	Ersatzteilliste	PB	001
仪表索引	PLT-Geräteliste	PB	002
系统运行记录；系统日志	Systemspiegel	PD	001
质量计划	Qualitätsplan	QA	001
测试计划	Prüfplan	QA	002
缺陷清单	Mängelliste	QA	003
检查表	Prüfliste	QA	004
危险场所分类图	Gefahrenzonenplan	QB	001
供电安全概念设计大纲	Schutzkonzept Energieversorgung	QB	002
SIL分类	SIL Einstufung	QB	003
材料安全数据表（MSDS）	Sicherheitsdatenblatt	QB	004
证书	Zertifikat	QC	001
试验报告	Prüfprotokoll	QC	002
验收文件	Abnahmedokumentation	QC	003
SIF测试表	Prüfblatt für Schutzeinrichtungen	QC	004
SIL验证	SIL Überprüfung	QC	005
安装图	Montageanordnung (Hook-up)	TC	001
装配图	Einbauzeichnung	TC	002

Annex B
(informative)

Examples

Figures in Annex B are examples of document kinds for electrical and instrumentation projects in the process industry. They are taken from current projects and anonymised as far as required and as such are reproduced as is, and are given purely for the user's information.

#Company

Customer

#dep.

No.	Company	Document designation				Revision index	Date of rev.	Docu status	Document kind name	Document title	Unit/name	Drawing/ Document-No.	Dispatch date	Distribution	Action
		Objekt	&DCC	sheets											
1	Company Ltd.	=A1 LAB1	CT001	EMA	01	A	2011-02-12	B	Conceptual wiring diagram	feedwater temperature	I&C/MEY	I&C/4712	2011-04-12	C	G
2															
3															
4															
5															
6															
7															
8															
9															
10															
11															
12															
13															
14															

427/Smith/2010-11-10

List of Documents

& EAB
1 of 1

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Figure B.1 – AB001 list of documents

# Company logo		Change state	# released
		Change date	# 2012-07-01
Customer	# Customer	Change note	
Document Title	# PLC-System Unit 4	DCC	&EBB
Document Type	Punch list	Language	# EN
Created by	# Name1	Version Index	# A
Checked by	# Name2	Total page number	# 1
Document Number	# AB123 123-4	Department	# department

Task ID	Task Owner	Priority	Task Description	Status	Due Date	Agree Date	Complete Date
A-001	#company	high	Nitrogen tank remote control loop check	partially completed	15.07.12	15.07.12	
A-002	#company	low	control room vaccuum cleaning	open	30.07.12		

printed: 15:37 16.07.12

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Figure B.2 – BB001 punch list

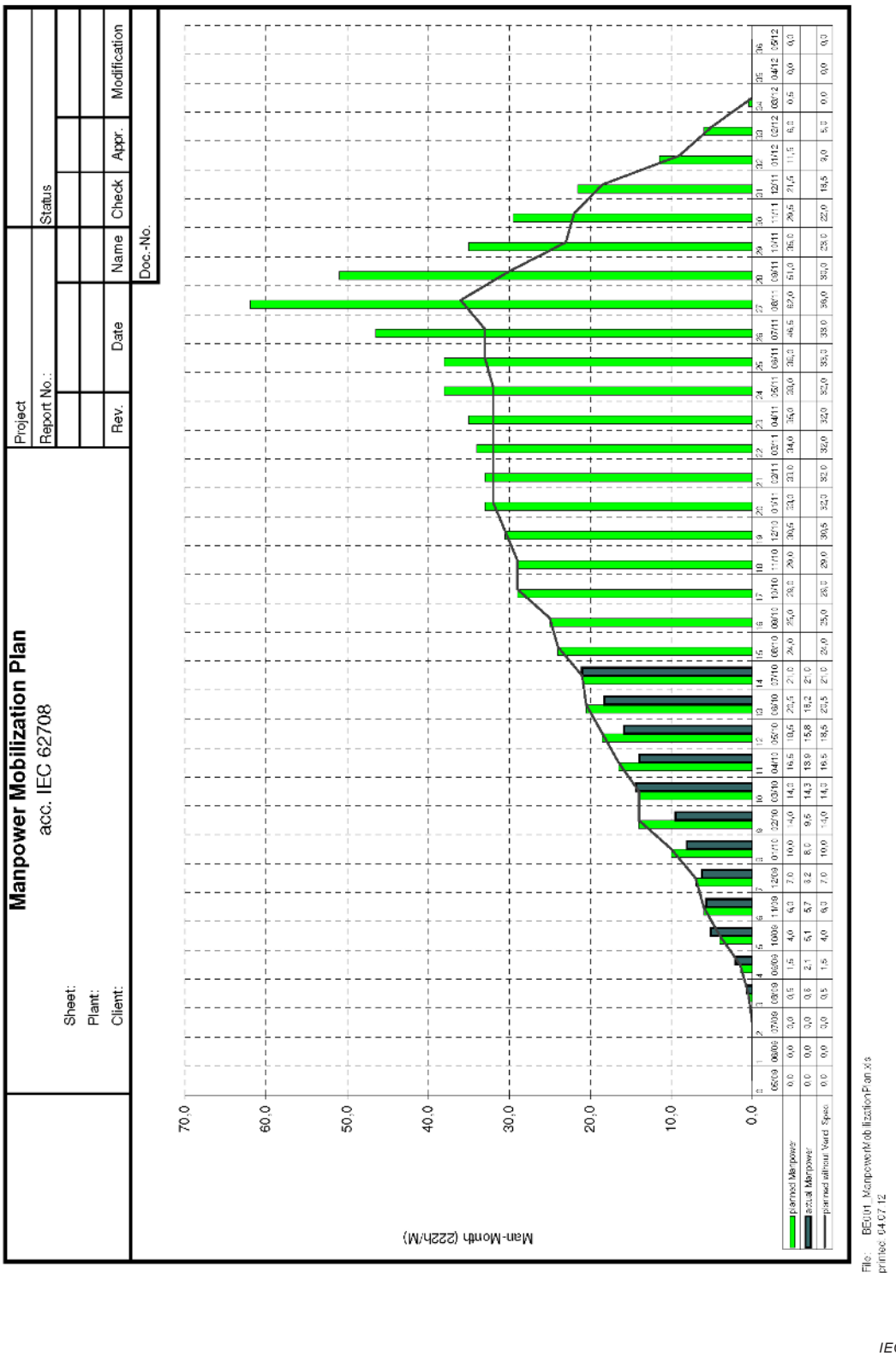

Figure B.3 – BE001 manpower mobilization plan

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Installation area data R

B51	Installation location	Outdoor, only antifreezing			
B52	Corrosive influence by (1)	Coastal climate			
B53	Ambient temp. [min.]\[max.]	-15.0	40.0	°C	
B54	Ambient work.temp.[min]\[max]	-15.0	40.0	°C	
B55	Max. relative humidity	95.00		%	
B57	Altitude above sea level	20.00		m	
B67	Remote hazardous area class	Zone 1, Group IIA			
B68	Remote area min. ign. temp.	T3 (> 200 °C)			
B69	Max. allow. sound press. level	85		dB(A)	
B20	Remark (1)				
B21	Remark (2)				

Process data R

B25	Fluid	Water			
B41	Composition	H2O2			
B42	Corrosive components				
B43	Toxic components				
B44	Abrasive components				
B45	Suspended particles				
B39	Special fluid properties (1)				
B40	Special fluid properties (2)				
B46	Water hazard class (WHC)				
B47	Indicat.of danger (67/548/EEC)				
B50	Pollution restriction				
B48	Inline hazardous area				
B26	Phase	(L) liquid			

	Runcase value	min.	norm.	max.	unit
D80	Measuring range	0.00		11.00	m^3/h
D50	Mass flow rate	3486.00	3984.00	9960.00	kg/h
D42	Actual flow rate	3.50	4.00	10.00	m^3/h
D51	Actual flow [i.N.]				Nm^3/h
D24	Operating pressure p1	6.00	7.00	9.00	bar a
D30	Operating temperature t1	30.0	30.0	30.0	°C
D33	Operating density	996.00	996.00	996.00	kg/m^3
D36	Pressure [Boiling-]\[Critical-]	0.04		220.00	bar a
D52	Temp. [Boiling-]\[Condensation-]	373.0			°C
D10	Density at ref.cond.				kg/Nm^3
D11	Dyn. viscosity				cP
D53	Molecular weight				g/mol
D54	Compressibility factor (Z1/Zn)				

Process data (continued) R

D55	Rel. dielectr. const. Epsilon r			
D56	Electrical conductivity			mS/cm
D66	Isentropic exponent			
D43	Max. allowable pressure drop		0.50	bar
D59	Remark (1)			
D60	Remark (2)			
D61	Remark (3)			

Location data R

B04	PI-Diagram / Sheet no.	13		
B80	Reference location	2"-P-13-76009-A3-3F		
B84	Pipe spec. selected	A3-3F		
B97	Connection type	flanged		
B14	Line[DN]\[PN]	2"	CLASS 300	
B93	Connection facing	RF, ANSI 16.5		
B92	Line material	Killed C.S. (A106-B)		
B64	Line diam.[inside]\[outside]	52.48	60.30	mm
B15	Insulation [type]\[thickness]			mm
B66	Heating/cooling [trace]\[temp.]			°C
B70	Design pressure [min.]\[max.]		27.00	bar a
B72	Design temp. [min.]\[max.]		260.0	°C
B98	Remark (1)			
B99	Remark (2)			

Loop functions

Req. functions	Add. functions	Funct. set point	Interlock	Funct. realis.	PID No.	Remark	R
IC				DCS	13		

Loop I/O list

Signal-ID	Realisation	Design class	Ex.prot.	Type of signal	Signal rate	Signal characteristic		SIL	R
_	DCS		EEx i	analogue signal	4...20 mA	Syst.powered	linear increasing		

Loop elements

Tag no.	Description	Part no.	Calibr.range [lower]\[upper]	Signal type	SIL	Remark	R
FE7608	Orifice plate assembly	KFAA001	0.0 \ 500.0 mbar				
FT7608	Flow dP-transmitter	KFEA001	0.0 \ 500.0 mbar	analogue signal			

Instrument data sheet acc. IEC 62708	Code	IEC 62708 / Doc templates	
	Plant		
	Unit		
R / Date / Client Doc.-ID:	Loop Identific.	**F7608**	
Doc.-ID-Code: / CC: / UA:		Page	1 / 1

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Figure B.4 – DA001 instrument data sheet

#Company# *#Customer#* #IC Dep#

Preventive maintenance has the task of checking the I&C components case sensitive or at specified intervals. This contributes significantly to the availability of the I&C system and therewith the plant. This service is required for the system components listed.				
Type	**DCS Part**	**Equipment**	**Task**	**Frequency**
Test	Emerg. Push Button	Emergency Shut Down		once a year
Maintenance	Digital Input Module	#Company# Order Number 1E1234-1BH02-0AA0	replacement with spare part and fixing	general device I&C alarm
Maintenance	SMART Actuator	#Company# Order Number 1A3210-1AA2-0AB0	upload of device diagnostic data, task according to detail information	device maintenance alarm
Maintenance	pH-Analyzer	#Company# Order Number 1A3210-1AA2-0AB0	calibration	once a month
Maintenance	SMART Actuator	#Company# Order Number 1A3210-1AA2-0AB0	visual on-site inspection	once a year
Maintenance	DCS Server 123	#Engineering Software#	update	twice a year
Maintenance	DCS Server 345	#DCS System Software#	patch	case sensitive
Maintenance	DCS Server 345	#Malware Protection Software'	malware protection	daily

Test and Maintenance Recommendations
Rev 1.0 & EDC
page 1 of 1

print: 17:08 10.02.2012 **Maintenance recommendations**

Figure B.5 – DC001 test and maintenance recommendations

# Company logo		Change state	# released
		Change date	# 2012-07-01
Customer	**# Customer**	Change note	
Document Title	**# PLC-System Unit 4**	DCC	&EDZ
Document Type	**Test and maintenance requirements**	Language	# EN
Created by	# Name1	Version Index	# A
Checked by	# Name2	Total page number	# 1
Document Number	# AB123 999-4	Department	# department

No	Affected object	Description of required activity	Law or regulation		Frequency
			Document	Title/Designation	
1	Emergency push button ammonia storage system	SIL functional proof testing	IEC 61508	Functional Safety of Electrical/Electronic/Programmable Electronic Safety-related Systems	once a year

printed: 15:39 16.07.12 page: 1

IEC

Figure B.6 – DZ001 test and maintenance requirements

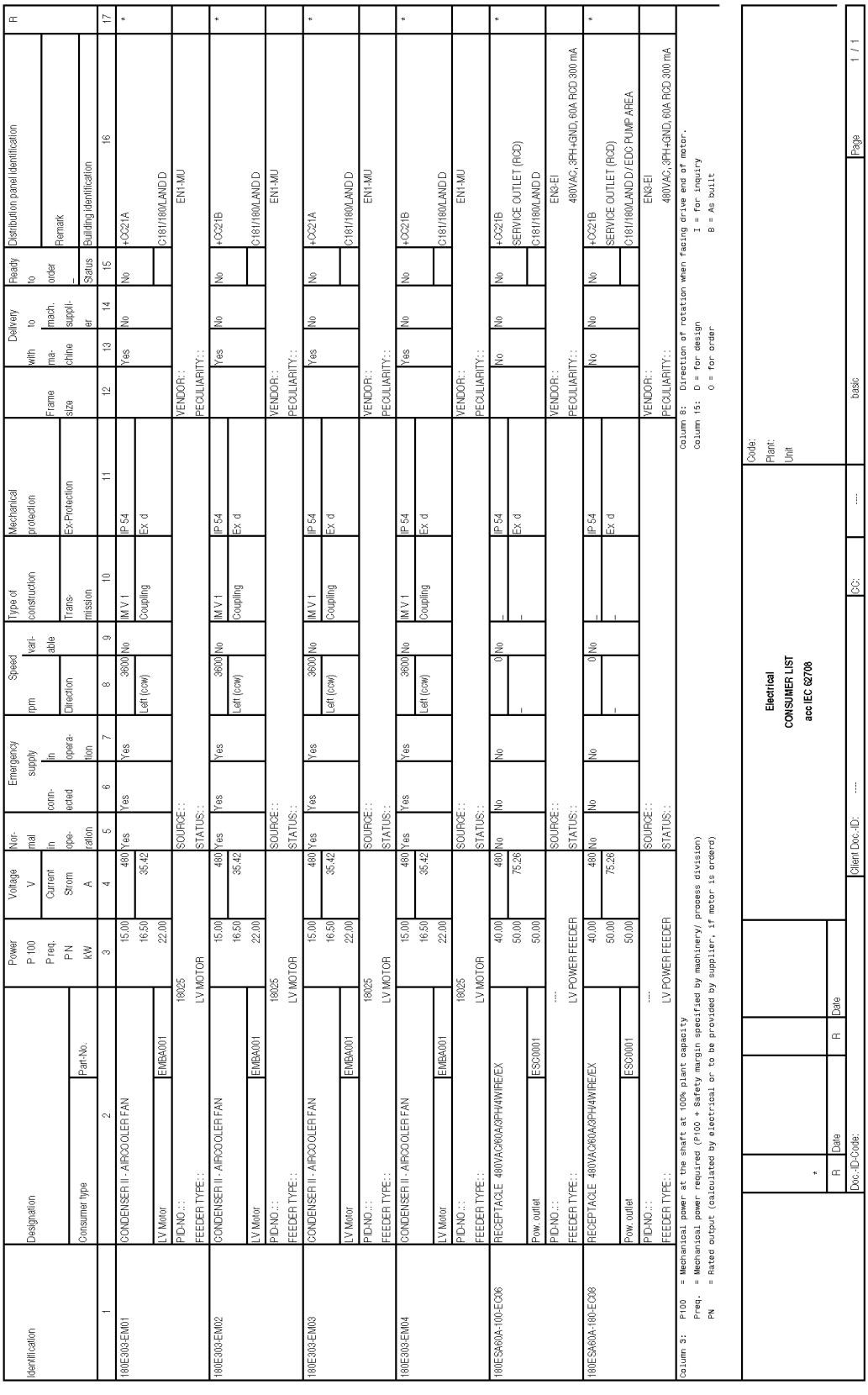

Figure B.7 – EC002 electrical consumer list

Date	Chk'd	Rev.	Description

K.T. No. :
CLIENT :
P.O.No.: :
DATE :
DOCUMENT : Heating Circuit List / Heizkreisliste

Process Temperature

	01	02	03	04	04a	04b	04c	05	05a	06	06_1	06_2	06_3	07	08	08	09	10	11	12	13	10	11	11	12	13	14	15	16	17	18	19	20			21	22	23	24	25	25	26	27
	Rev. No.	H.C. No. 5°C	H.C. No. Hold	Distribution Box No.		Distribution Box No.	Unit	JB No.		INDICATION Pipe/Instrument name		DIA.	DIA.	DIA.	LENG. Acc. Requ.	LENGTH Acc. Iso	VAL.	Reduc.	Tee	Coupl.	SUPP. Alt	SUPP.	Elbow	INSUL.	TEMP. _amb.	oper.	_max. allow.	_hold	max. uncontr.	P_NOM. req. _hold	actual	LAY.	LENG.			TOTAL LENG.	HEATING Cable TYPE	U_NOM.	R_NOM. oper.	R_NOM. max.	P_NOM. oper.	P_NOM. max.	P_NOM. oper.	I_NOM. max.	I_NOM. oper.	
												[mm]	[inch]	[mm]	[m]	[m]	[pc.]	[pc.]	[pc.]		[pc.]	[pc.]	[pc.]	[mm]	[°C]					[W/m/m²]		[fold]	[m]					[V]	Ohm/m	[W/m]	[W/m]	[kW]	[kW]	[A]	[A]	
	01					C12 CSO300101D-N01		C12.F	CSO300101D	-N01	50	2"	60	28,1	30,9	3	2	0	0	6	10	8	50	-20	30	150	20	55	15,2	22,5	1	35,0			43	HKT28J	240		22,5	0,00	0,97	0,0	4,03	
	02					C12 CSO334101-N01		C12.F	CSO334101	-N01	15	1/2"	21	10	20,1	3	1	1	0	4	5	4	50	-20	30	150	20	90	8,5	12,5	1	12,0			28	HKT25J	240		12,5	0,00	0,35	0,0	1,46	
	03					C12 HCS331201D-N01		C12.F	HCS331201D	-N01	50	2"	60	10,9	14,6	7	0	2	0	4	6	10	50	-20	40	150	20	78	15,2	22,5	1	22,0			27	HKT28J	240		22,5	0,00	0,61	0,0	2,53	
	04					C12 HCS331202-N01		C12.F	HCS331202	-N01	40	1 1/2"	48	3,7	5,4	2	0	0	0	1	1	2	50	-20	40	150	20	73	13,2	14,0	1	7,0			11	HKT25J	240		14,0	0,00	0,15	0,0	0,64	
	05			3-LEE-1/	C12.21-N01	C12 ML331205-N01		C12.F	ML331205	-N01	150	6"	168	21,2	24,7	2		2	0	4	4	6	60	-20	40	150	30	82	34,4	44,0	1	35,0			41	HKT215J	240		44,0	0,00	1,80	0,0	7,52	
	06					C12 ML331206D-N01		C12.F	ML331206D	-N01	150	6"	168	22,1	23,1	0	1	12	0		5	5	60	-20	40	110	30	82	34,4	44,0	1	45,0			41	HKT215J	240		44,0	0,00	1,80	0,0	7,52	
	07			3-LEE-1/	C12.22-N01	C12 ML331206D-N02		C12.F	ML331206D	-N02	150	6"	168	22,1	28,1	0	1	12	0		4	5	60	-20	40	110	30	82	34,4	44,0	1	46,0			39	HKT215J	240		44,0	0,00	1,72	0,0	7,15	
	07					C12 ML331206D-N02			ML331206D	-N02	50	2"	60	0	5,1								60	-20	40	110	30	82	17,0	25,2	1				9	HKT28J	240		21,0	0,00	0,19	0,0	0,79	
	08.1	3-LEE-1/C12.21-N01		3-LEE-1/	C12.21-N01	C12 3-LEE-1/ML33114		C12.F	ML331140	-N01	40	1 1/2"	48	20,9	24,3	3	0	0	0		8	8	50	-20	40	180	10	72	9,9	15,0	1	27,0			42	HKT25J	240		15,0	0,00	0,63	0,0	2,63	
	08.2					C12 D3103-N01			D3103	-N01	400	16	406		0,8	0	0	0	0		0	0	50	-20	40	180	10	10	50,1	288,0	12				12	HKT28J	240		24,0	0,00	0,29	0,0	1,20	
	09			3-LEE-1/	C12.23-N01	C12 ML331202-N01		C12.F	ML331202	-N01	50	2"	60	4,2	4,6	3	1	1	0	2	2	4	50	-20	40	180	10	70	11,4	15,0	1	11,0			10	HKT25J	240 240		15,0	0,00	0,15	0,0	0,63	
x	10					C12 ML331210-N01		C12.F	ML331210	-N01	15	1/2"	21	21	10,4	1	0	0	0			7	50	-20	40	150	30	85	10,7	13,0	1	30,0			18	HKT25J	240		13,0	0,00	0,23	0,0	0,98	
									ML331210	-N02	15	1/2"	21	3	10,4	1	0	0	0			6	50	-20	40	150	30	85	10,7	13,0	1	30,0			7	HKT25J	240		13,0	0,00	0,09	0,0	0,38	
	11					C12 OG335102D-N01		C12.F	OG335102D	-N01	80	3"	89	9	25,3	6	4	8	0		6	5	50	-20	40	150	40	85	29,6	30,0	1	30,0			39	HKT212J	240		30,0	0,00	1,17	0,0	4,88	
	12					C12 OG335102D-N02		C12.F	OG335102D	-N02	80	3"	89	9,3	31,4	4	4	8	0		7	5	50	-20	40	150	40	85	29,6	30,0	1	30,0			43	HKT212J	240		30,0	0,00	1,29	0,0	5,38	
	13.1	3-LEE-1/C12.22-N01		3-LEE-1/	C12.22-N01	C12 WG335101D-N01		C12.F	WG335101D	-N01	80	3"	89	15,5	14,1	0	0	0	0	4	4	3	50	-20	50	150	40	85	29,6	30,0	1	19,0			19	HKT212J	240		30,0	0,00	0,57	0,0	2,38	
	13.2					C12 WG335106-N01			WG335106	-N01	80	3"	89	6,2	9,5	5	2	2	0		5	5	50	-20	50	150	40	85	29,6	30,0	1	17,0			21	HKT212J	240		30,0	0,00	0,63	0,0	2,63	
	14					C12 ML335101-N01		C12.F	ML335101	-N01	25	1"	34		43,3	6	0	0	0	1	16	3	50	-20	30	150	30	88	13,6	21,0	1				52	HKT28J	240		21,0	0,00	1,09	0,0	4,55	
	15					C12 ML335101-N02		C12.F	ML335101	-N02	25	1"	34		42,2	0	0	0	0	1	11	3	50	-20	30	150	30	88	13,6	21,0	1				59	HKT28J	240		21,0	0,00	1,24	0,0	5,16	
	16								Reserve																																			
	17.1	3-LEE-1/C12.23-N01		3-LEE-1/	C12.23-N01	C12 WG335114-N01		C12.F	WG335114	-N01	80	3"	89		6,9	4	1	0	0		2	2	60	-20	50	150	40	85	26,2	30,0	1	4,0			15	HKT212J	240		30,0	0,00	0,45	0,0	1,88	
	17.2					C12 WG335115-N01			WG335115	-N01	80	3"	89		7,2	1	1	0	0		2	2	60	-20	50	150	40	85	26,2	30,0	1	4,0			15	HKT212J	240		30,0	0,00	0,45	0,0	1,88	
	18					C13 CSO334102-N01		C13.F	CSO334102	-N01	25	1"	34	30	38,5	1	0	0	0	8	11	6	50	-20	30	150	20	78	10,9	14,0	1	32,0			43	HKT25J	240		14,0	0,00	0,60	0,0	2,51	
	19					C13 ML322217P-N01		C13.F	ML322217P	-N01	50	2"	60	18	41,7	0	2	6	0		11	5	50	-20	40	150	30	79	18,9	21,0	1	40,0			57	HKT28J	240		21,0	0,00	1,20	0,0	4,99	

Figure B.8 – EC008 heating circuit list

Print:

1	**Installation area data**										R
2	B51	Installation location	Outdoor, only antifreezing				B67	Remote hazardous area class	Zone 1, Group IIA		
3	B52	Corrosive influence by (1)	Coastal climate				B68	Remote area min. ign. temp.	T3 (> 200 °C)		
4	B53	Ambient temp. [min.]\[max.]	-15.0	40.0	°C		B69	Max. allow. sound press. level	85	dB(A)	
5	B54	Ambient work.temp.[min]\[max]	-15.0	40.0	°C		B20	Remark (1)			
6	B55	Max. relative humidity		95.00	%		B21	Remark (2)			
7	B57	Altitude above sea level		20.00	m						
8	**Process data**					R	**Process data (continued)**				R
9	B25	Fluid	Water				D53	Molecular weight		g/mol	
10	B41	Composition	H2O2				D54	Compressibility factor (Z1/Zn)			
11	B42	Corrosive components					D55	Rel. dielectr. const. Epsilon r			
12	B43	Toxic components					D56	Electrical conductivity		mS/cm	
13	B44	Abrasive components					D66	Isentropic exponent			
14	B45	Suspended particles					D43	Max. allowable pressure drop	0.50	bar	
15	B39	Special fluid properties (1)					D59	Remark (1)			
16	B40	Special fluid properties (2)					D60	Remark (2)			
17	B46	Water hazard class (WHC)					**Location data**				R
18	B47	Indicat.of danger (67/548/EEC)					B04	PI-Diagram / Sheet no.	13		
19	B50	Pollution restriction					B80	Reference location	2"-P-13-76009-A3-3F		
20	B48	Inline hazardous area					B84	Pipe spec. selected	A3-3F		
21	B26	Phase	(L) liquid				B97	Connection type	flanged		
22		**Runcase value**	**min.**	**norm.**	**max.**	**unit**	B14	Line[DN]\[PN]	2"	CLASS 300	
23	D50	Mass flow rate	3486.00	3984.00	9960.00	kg/h	B93	Connection facing	RF, ANSI 16.5		
24	D42	Actual flow rate	3.50	4.00	10.00	m³/h	B92	Line material	Killed C.S. (A106-B)		
25	D51	Actual flow [i.N.]				Nm³/h	B64	Line diam.[inside]\[outside]	52.48	60.30	mm
26	D24	Operating pressure p1	6.00	7.00	9.00	bar a	B15	Insulation [type]\[thickness]			mm
27	D30	Operating temperature t1	30.0	30.0	30.0	°C	B66	Heating/cooling [trace]\[temp.]			°C
28	D33	Operating density	996.00	996.00	996.00	kg/m³	B70	Design pressure [min.]\[max.]		27.00	bar a
29	D36	Pressure [Boiling-]\[Critical-]	0.04		220.00	bar a	B72	Design temp. [min.]\[max.]		260.0	°C
30	D52	Temp. [Boiling-]\[Condensation-]	373.0			°C	B98	Remark (1)			
31	D10	Density at ref.cond.				kg/Nm³	B99	Remark (2)			
32	D11	Dyn. viscosity				cP					
33	**Component process design**					R	**Component process design (continued)**				R
34	N01	Manufacturer					N93	Flow element type	flange orifice		
35	N02	Manufacturer model no.					N10	Cleaning requirement			
36	N03	Type of construction					T44	Design max.flow		11.00	m³/h
37	N08	Compon. conn. [style]\[stand.]	flanged	ANSI B16.5			N04	Calibration range [lower]\[upper]	0.0	500.0	mbar
38	N43	Compon. conn. [DN]\[PN]	2"	CLASS 300			T45	Max. calculated pressure loss			bar a
39	N44	Facing compon.conn.	RF, ANSI 16.5				N12	Remark (1)			
40	N09	Material body/process conn.	316 L				N13	Remark (2)			
41	N97	Material meas.cell (wetted)									
42	N58	Plate thickness				mm					
43	N59	Orifice bore type									
44	N88	Orifice inlet edge style									
45	N89	Beta d/D Bore dia.				mm					
46	N90	Plate outside diameter				mm					
47	N95	Clearance [up-]\[downstream]				mm					
48	N92	Vent/drain hole\size				mm					
49	**Mechanical design**					R	**Additional accessories / Material part no.**				R
50							N87				
51	N94	Stampings					N86				
52	T47	Installation position					T51				
53	N78	Flow direction	horizontal				T52				
54	T17	Internal connection style					T53				
55	T48	Tap conn. [type]\[size]	--				N60				
56	T49	Material tapping conn.					N37	Remark (1)			
57	T50	Material lining					N38	Remark (2)			
58	F01										
59	N25	Remark (1)									
60	N26	Remark (2)									
61											
62											
63											
64											

	Requirement Specification	Code	IEC 62708 / Doc templates	
	acc. IEC 62708	Plant		
	Orifice plate assembly	Unit		
		Part no.	**KFAA001**	
R	Date	Client Doc.-ID:	TAG Identific.	**FE7608**
Doc.-ID-Code:	CC:	UA:		Page 1 / 1

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Figure B.9 – EC009 requirement specification

Print:

1	**Installation area data**					R							R
2	B51	Installation location	Outdoor, only antifreezing				B67	Remote hazardous area class	Zone 1, Group IIA				
3	B52	Corrosive influence by (1)	Coastal climate				B68	Remote area min. ign. temp.	T3 (> 200 °C)				
4	B53	Ambient temp. [min.]\[max.]	-15.0	40.0	°C		B69	Max. allow. sound press. level	85		dB(A)		
5	B54	Ambient work.temp.[min]\[max]	-15.0	40.0	°C		B20	Remark (1)					
6	B55	Max. relative humidity		95.00	%		B21	Remark (2)					
7	B57	Altitude above sea level		20.00	m								
8	**Process data**					R	**Process data (continued)**						R
9	B25	Fluid	Water				D53	Molecular weight			g/mol		
10	B41	Composition	H2O2				D54	Compressibility factor (Z1/Zn)					
11	B42	Corrosive components					D55	Rel. dielectr. const. Epsilon r					
12	B43	Toxic components					D56	Electrical conductivity			mS/cm		
13	B44	Abrasive components					D66	Isentropic exponent					
14	B45	Suspended particles					D43	Max. allowable pressure drop	0.50		bar		
15	B39	Special fluid properties (1)					D59	Remark (1)					
16	B40	Special fluid properties (2)					D60	Remark (2)					
17	B46	Water hazard class (WHC)					**Location data**						R
18	B47	Indicat.of danger (67/548/EEC)					B04	PI-Diagram / Sheet no.	13				
19	B50	Pollution restriction					B80	Reference location	2"-P-13-76009-A3-3F				
20	B48	Inline hazardous area					B84	Pipe spec. selected	A3-3F				
21	B26	Phase	(L) liquid				B97	Connection type	flanged				
22		**Runcase value**	**min.**	**norm.**	**max.**	**unit**	B14	Line[DN]\[PN]	2"	CLASS 300			
23	D50	Mass flow rate	3486.00	3984.00	9960.00	kg/h	B93	Connection facing	RF, ANSI 16.5				
24	D42	Actual flow rate	3.50	4.00	10.00	m³/h	B92	Line material	Killed C.S. (A106-B)				
25	D51	Actual flow [i.N.]				Nm³/h	B64	Line diam.[inside]\[outside]	52.48	60.30	mm		
26	D24	Operating pressure p1	6.00	7.00	9.00	bar a	B15	Insulation [type]\[thickness]			mm		
27	D30	Operating temperature t1	30.0	30.0	30.0	°C	B66	Heating/cooling [trace]\[temp.]			°C		
28	D33	Operating density	996.00	996.00	996.00	kg/m³	B70	Design pressure [min.]\[max.]		27.00	bar a		
29	D36	Pressure [Boiling-]\[Critical-]	0.04		220.00	bar a	B72	Design temp. [min.]\[max.]		260.0	°C		
30	D52	Temp. [Boiling-]\[Condensation-]	373.0			°C	B98	Remark (1)					
31	D10	Density at ref.cond.				kg/Nm³	B99	Remark (2)					
32	D11	Dyn. viscosity				cP							
33	**Component process design**					R	**Component process design (continued)**						R
34	N01	Manufacturer	XYZ Company				N93	Flow element type	flange orifice				
35	N02	Manufacturer model no.	678-BD				N10	Cleaning requirement					
36	N03	Type of construction	ISO 5167				T44	Design max.flow	11.00		m³/h		
37	N08	Compon. conn. [style]\[stand.]	flanged	ANSI B16.5			N04	Calibration range [lower]\[upper]	0.0	500.0	mbar		
38	N43	Compon. conn. [DN]\[PN]	2"	CLASS 300			T45	Max. calculated pressure loss	0,5		bar a		
39	N44	Facing compon.conn.	RF, ANSI 16.5				N12	Remark (1)					
40	N09	Material body/process conn.	316 L				N13	Remark (2)					
41	N97	Material meas.cell (wetted)											
42	N58	Plate thickness		4,50	mm								
43	N59	Orifice bore type	straight										
44	N88	Orifice inlet edge style	sharp edge										
45	N89	Beta d/D Bore dia.	0,475	24,9	mm								
46	N90	Plate outside diameter		100	mm								
47	N95	Clearance [up-]\[downstream]	700	1500	mm								
48	N92	Vent/drain hole\size	n.a.	n.a.	mm								
49	**Mechanical design**					R	**Additional accessories / Material part no.**						R
50							N87						
51	N94	Stampings	Bore diameter/ material				N86						
52	T47	Installation position	horizontal				T51						
53	N78	Flow direction	horizontal				T52						
54	T17	Internal connection style	n.a.				T53						
55	T48	Tap conn. [type]\[size]	flange tap	1/2"			N60						
56	T49	Material tapping conn.					N37	Remark (1)					
57	T50	Material lining					N38	Remark (2)					
58	F01												
59	N25	Remark (1)											
60	N26	Remark (2)											
61													
62													
63													
64													

	Specification Sheet acc. IEC 62708 **Orifice plate assembly**	Code	IEC 62708 / Doc templates	
		Plant		
		Unit		
		Part no.	**KFAA001**	
R	Date	TAG Identific.	**FE7608**	
Doc.-ID-Code:	CC: UA:		Page	1 / 1

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Figure B.10 – EC010 specification sheet

 Print: 15.09.11

1	Loop-	Service	PID No.	Required functions	Remark			R
2	Identification					R	Date	
3	1	2	3	4	5	6	7	8
4	A7602	Product to BL	14	I				
5	A7654	Heavies to BL	13	E				
6	F7608	Heavies to BL	13	IC				
7	F7609	E7608 MP Steam in	13	IC				
8	F7610	P7604 Min. flow	14	IC				
9	F7612	C7602 Recycle	14	IC				
10	F7613	Product to BL	14	IC				
11	F7651	P7603A Min. Flow	13	B				
12	F7652	P7603B Min. flow	13	B				
13	H7613	P7603 Off	13	S, SL				
14	H7614	P7603 Off	13	S, SL				
15	H7615	P7603 On / Off	13	S, SH,SL				
16	H7619	P7604 Off	14	S, SL				
17	H7620	P7604 Off	14	S, SL				
18	H7621	P7604 On / Off	14	S, SH,SL				
19	L7604	C7602 Bottom	13	IC,AH,AL				
20	L7605	D7603	14	IC,AH,AL				
21	L7654	C7602 Bottom	13	I				
22	L7655	D7603	14	I				
23	P7615	C7602 Top	13	IC,AH,AL				
24	P7616	C7602 upper section	13	DI;AH				
25	P7617	C7602 lower section	13	DI;AH				
26	P7619	C7602 Bottom	13	I				
27	P7664	P7603A	13	I				
28	P7665	P7603B	13	I				
29	P7666	E7608 MP Steam in	13	I				
30	P7667	D7603	14	I				
31	P7668	P7604A	14	I				
32	P7669	P7604B	14	I				
33	P7670	Product to BL	14	I				
34	T7614	E7610 Cooler out	13	I				
35	T7615	C7602 tray 1	13	I				
36	T7616	C7602 tray 6	13	I				
37	T7617	C7602 tray 28	13	I				
38	T7618	C7602 tray 48	13	IC				
39	T7619	E7608 Reboiler out	13	I				
40	T7620	C7602 Bottom	13	I				
41	T7621	E7609 Condenser out	14	IC;AL				
42	T7622	D7603	14	I				
43	T7623	Product to BL	14	I				
44	T7630	C7602 tray 43	13	I				
45	T7631	C7602 tray 15	13	I				
46	T7632	C7602 tray 24	13	I				
47	T7669	Heavies to BL	13	I				
48	T7670	E7610 Cooling Water Return	13	I				
49	T7671	E7610 Cooler in	13	I				
50	T7672	E7608 Reboiler in	13	I				
51	T7673	E7609 Condenser in	14	I				
52	T7675	E7611 Cooling Water Return	14	I				
53	U7605	Shut Down C7602 Feed	13	S				
54	U7606	Shut down P7603	13	S				
55	U7608	Shut Down C7602 Recycle	14	S				
56	U7609	Shut down P7604	14	S				
57	U7610	Split range D7603	14	C				
58	U7612	C7602 Recycle	14	C				
59	U7613	Product to BL	14	C				
60	U7633	Delta TI7631 / TI 7632	13	C				
61	V7602	E7609 Fan	14	S;ASH				
62	Y7603	Heavies to BL	13	C				
63	Y7604	E7608 MP Condensate out	13	C				
64	Y7605	C7602 Bottom	13	S;OH,OSL				

Loop list
acc. IEC 62708

Code IEC 62708 / Doc templates
Plant
Unit

R Date Client Doc.-ID:

Doc.-ID-Code: CC: EC UA: DE Page 1 / 2

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Figure B.11 – EC011 loop list

		BILL OF QUANTITIES INSTRUMENTATION			Project Revision		00					
					Bidder				Quantities			
Rev	BoQ Item	Description	Unit	Actual Total Quantity	Erection Unit Hours	Total Hours	Unit Rate USD	Total USD	Units - Central Devices	103	105 905	901
	54	**INSTRUMENTATION**										
	54.00											
	54.00.00	**GENERAL DESCRIPTION OF WORK**										
	54.00.00.0000											
	54.K1	**Process connection, direct**										
	54.K1.00											
	54.K1.00.0000											
	54.K1.00.A110	Direct mounted < 80 °C	nos	0.00		0.00		0.00				
	54.K1.00.A120	PI flanged, with flushing ring	nos	0.00		0.00		0.00				
	54.K1.00.A210	Direct mounted > 80 °C	nos	0.00		0.00		0.00				
	54.K2	**Process connection, remote**		0.00		0.00		0.00				
	54.K2.00			0.00		0.00		0.00				
	54.K2.00.0000			0.00		0.00		0.00				
	54.K2.00.G110	P for gas service, above TP	nos	0.00		0.00		0.00				
	54.K2.00.G210	P for gas service, below TP	nos	0.00		0.00		0.00				
	54.K2.00.G410	P for reformer fire detection	nos	0.00		0.00		0.00				
	54.K2.00.GR10	PI remote, above TP	nos	0.00		0.00		0.00				
	54.K2.00.GT10	P for gas, above, two TPs	nos	0.00		0.00		0.00				
	54.K2.00.L110	P for liquid service, below TP	nos	0.00		0.00		0.00				
	54.K2.00.L210	P for liquid service, above TP	nos	0.00		0.00		0.00				
	54.K2.00.P110	P with purge gas connection	nos	0.00		0.00		0.00				
	54.K2.00.P120	P for liquid, in box, below TP	nos	0.00		0.00		0.00				
	54.K2.00.P310	P for wet gas, in box above TP	nos	0.00		0.00		0.00				
	54.K2.00.V110	P for LP, < 900#, below TP	nos	0.00		0.00		0.00				
	54.K2.00.V210	P for LPS, < 900#, above TP	nos	0.00		0.00		0.00				
	54.K2.00.V310	P for –PS, > 900# below TP	nos	0.00		0.00		0.00				
	54.K3	**Process connection, dP**		0.00		0.00		0.00				
	54.K3.00			0.00		0.00		0.00				
	54.K3.00.0000			0.00		0.00		0.00				
	54.K3.00.G110	dP for gas service, above TP	nos	0.00		0.00		0.00				
	54.K3.00.G210	dP for gas service, below TP	nos	0.00		0.00		0.00				
	54.K3.00.GR10	dPg for gas service, above TP	nos	0.00		0.00		0.00				
	54.K3.00.GR20	dPg for gas service, below TP	nos	0.00		0.00		0.00				
	54.K3.00.L110	dP for liquid, below TP	nos	0.00		0.00		0.00				
	54.K3.00.L210	dP for liquid, above TP	nos	0.00		0.00		0.00				
	54.K3.00.L310	dP with OC, above TP	nos	0.00		0.00		0.00				
	54.K3.00.L410	dP liquid, in box, below TP	nos	0.00		0.00		0.00				
	54.K3.00.LR10	dPg for liquid, above TP	nos	0.00		0.00		0.00				
	54.K3.00.LR20	dPg for liquid, below TP	nos	0.00		0.00		0.00				
	54.K3.00.P110	dP with purge gas, above TP	nos	0.00		0.00		0.00				
	54.K3.00.P310	dP wet gas, in box, above TP	nos	0.00		0.00		0.00				
	54.K3.00.V110	dP for LPS, below TP	nos	0.00		0.00		0.00				
	54.K3.00.V210	dP for LPS, above TP	nos	0.00		0.00		0.00				
	54.K4	**Sensors, final check**		0.00		0.00		0.00				
	54.K4.00			0.00		0.00		0.00				
	54.K4.00.0000			0.00		0.00		0.00				
	54.K4.00.4110	PT, capillary, with FR pipe	nos	0.00		0.00		0.00				
	54.K4.00.4120	PT, capillary, with tubus	nos	0.00		0.00		0.00				
	54.K4.00.4210	dPT, capillary, with FR pipe	nos	0.00		0.00		0.00				
	54.K4.00.4710	PT, capillary, with FR vessel	nos	0.00		0.00		0.00				
	54.K4.00.4730	dPT, capillary, with diaphram	nos	0.00		0.00		0.00				
	54.K4.00.4810	dPT, capillary, with FR vessel	nos	0.00		0.00		0.00				
	54.K4.00.4910	TM flanged, with flushing ring	nos	0.00		0.00		0.00				
	54.K4.00.FA20	F, annubar, opposite support	nos	0.00		0.00		0.00				
	54.K4.00.FE10	F, orifice	nos	0.00		0.00		0.00				
	54.K4.00.FN10	F, magnetic, with ER	nos	0.00		0.00		0.00				
	54.K4.00.FN20	F, magnetic, with remote TM	nos	0.00		0.00		0.00				
	54.K4.00.FU20	F, ultrasonic	nos	0.00		0.00		0.00				
	54.K4.00.FV10	F, variable	nos	0.00		0.00		0.00				
	54.K4.00.FV20	Mass flow meter	nos	0.00		0.00		0.00				
	54.K4.00.FVM0	Variable micro flow	nos	0.00		0.00		0.00				
	54.K4.00.L110	L, magnetic	nos	0.00		0.00		0.00				
	54.K4.00.L120	L, magnetic	nos	0.00		0.00		0.00				
	54.K4.00.L210	L, measurement, flanged	nos	0.00		0.00		0.00				
	54.K4.00.L220	L, displacer, sandwich, pipe	nos	0.00		0.00		0.00				
	54.K4.00.L280	L, displacer, sandwich, vessel	nos	0.00		0.00		0.00				
	54.K4.00.L490	L, fork, radar, capacity, etc	nos	0.00		0.00		0.00				
	54.K4.00.L650	L, pilot with indicator	nos	0.00		0.00		0.00				
	54.K4.00.LD10	L, direct, minus leg tubed	nos	0.00		0.00		0.00				
	54.K4.00.T010	TW installation check	nos	0.00		0.00		0.00				
	54.K5	**Sensors, miscellaneous**		0.00		0.00		0.00				
	54.K5.00			0.00		0.00		0.00				
	54.K5.00.0000			0.00		0.00		0.00				
	54.K5.00.0020	Local electrical device	nos	0.00		0.00		0.00				
	54.K5.00.0030	Local push button	nos	0.00		0.00		0.00				
	54.K5.00.0040	T, local, ambient	nos	0.00		0.00		0.00				
	54.K5.00.B020	Flame scanner	nos	0.00		0.00		0.00				
	54.K5.00.L910	L, radioactive, stripper	nos	0.00		0.00		0.00				
	54.K5.00.L920	L, radioactive, reactor	nos	0.00		0.00		0.00				
	54.K5.00.L930	L, radioactive, vessel	nos	0.00		0.00		0.00				
	54.K5.00.T010	TI, local	nos	0.00		0.00		0.00				
	54.K5.00.T020	TTM, one head	nos	0.00		0.00		0.00				
	54.K5.00.T030	TTM, two heads	nos	0.00		0.00		0.00				
	54.K5.00.T040	T, multi, with signal cable	nos	0.00		0.00		0.00				
	54.K5.00.T050	T, multi, with home run cable	nos	0.00		0.00		0.00				
	54.K5.00.T060	T, thermocouples for flare	nos	0.00		0.00		0.00				
	54.M4	**Actors, final check**		0.00		0.00		0.00				
	54.M4.00			0.00		0.00		0.00				
	54.M4.00.0000			0.00		0.00		0.00				
	54.M4.00.0110	CV with positioner	nos	0.00		0.00		0.00				
	54.M4.00.0120	CV with positioner and FBS	nos	0.00		0.00		0.00				
	54.M4.00.0130	CV with positioner and SOL	nos	0.00		0.00		0.00				
	54.M4.00.0140	CV with tank, POS and FBS	nos	0.00		0.00		0.00				
	54.M4.00.0150	CV with SOL solenoid and FBS	nos	0.00		0.00		0.00				

EC014_Construction Bill of Quantities 1 of 9 24/03/2012

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Figure B.12 – EC014 construction bill of quantities

Project No:	Project No:	Owner Project No:
Job Code:	Job Code:	Owner Job Code:
Document No:	Owner Document No.:	
	Page 2 of 3	

Engineering specification for instrumentation

Process connections and measuring points

Instrument tapping sizes			
Part 1 Connection on equipment			
Instrument type	**Equipment connection**	**First block valve**	**Instrument connection**
Pressure			
Pressure gauge / pressure switch	1“ nozzle	1“	$^1/_2$“ male thread [1)]
Diaphragm gauge / pressure switch	2“ nozzle	2“	2“ flanged
Pressure transmitter	1“ nozzle	1“	$^1/_2$“ male thread [1)]
Flanged pressure transmitter	2“ nozzle	2“	2“ flanged
Remote seal type pressure transmitter	2“ nozzle	2“	2“ wafer
DP transmitter	1“ nozzle	1''	$^1/_2$“ (F) [1)]
Remote seal type DP transmitter	3“ nozzle [3)]	3''	3“ wafer [3)]
Temperature			
Thermowell [2)]	2“ nozzle	---	2“ flanged thermowell with $^1/_2$“ (F) thread
Gauge / RTD / thermocouple			$^1/_2$“ male thread
Level			
Level gauges	1“ nozzle	1“	1“ flanged
Magnetic level indicator	2“ nozzle	2“	2“ flanged
Level switch (external float switch, side mounted)	1“ nozzle	1“	1“ flanged
DP level transmitter	1“ nozzle	1“	$^1/_2$“ (F) [1)]
Flanged level transmitter	3“ nozzle [3)]	3“ [3)]	3“ flanged [3)]
Remote seal type level transmitter	3“ nozzle [3)]	3“ [3)]	3“ wafer [3)]
Displacer level transmitter	2“ nozzle	2“	2“ flanged
Purge level transmitter	1“ nozzle	$^1/_2$“	$^1/_2$“ (F) [1)]
Capacitive level transmitter	2“ nozzle	---	2“ flanged
Level switch (vibrating, capacitive)	2“ nozzle	---	2“ flanged
Level switch (internal float)	3“ nozzle (min.)	---	3“ flanged
Stand pipe [5)]	3“ nozzle (min.)	$^1/_2$“	---

	Doc. ID-Code …	Rev.

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Figure B.13 – EC015 specification E&I process connections

Company Logo						
	Site:		Plant Complex:		Building:	
	Process:		Sub-Process		Page / of	1/1
Department	Technical Item:		PCT Loop:			
	PCT-Loop type		Pressure transmitter			
Version x.x						

Ex-i calculation sheet

Based on IEC 60079-11

! Only valid for combinations with with one intrinsically-safe electrical apparatus !

Explosion hazardous area classiciation	Zone	Explos.- Group	Temp. Class
	1	IIA	T3

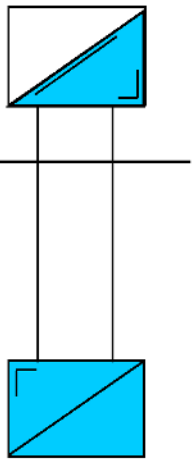
Vergleich der sicherheitsrelevanten Grenzwerte

Intrinsically-safe electrical apparatus + cable		Comparison	dedicated apparatus		Intrisically safe?
U_i (V)	40	>=	U_0 (V)	27,6	Yes
I_i (mA)	100	>=	I_0 (mA)	91	Yes
P_i (mW)	2000	>=	P_0 (mW)	630	Yes
Li - field device + Lc cable (mH)	0,1	<=	L_a (mH)	3	Yes
Ci - field device + Cc - cable (nF)	15	<=	C_0 (nF)	83	Yes
Classification of the electrical circuit		**Comparison**	**Explosion hazardous area classification**		**Certification ?**
Zone:	1	<=	Zone:	1	Yes
Explos. - Group:	IIC	>=	Explos. - Groupe:	IIA	Yes
T. - Class:	T4-T6	>=	T. - Class:	T3	Yes

Apparatus:	Ex-i values		
U_0 (V)	27,6	Manufacturer:	XXX
I_0 (mA)	91	Type:	6ES7 134-7TD00-0AB0
P_0 (mW)	630	Attribute:	II 2 G (1) GD EEx ib [ia] IIC T4
L_0 (mH)	3	Conformity No.:	KEMA 04 ATEX 1244
C_a (nF)	83	Amendment No.:	
		Ex.-Group:	IIC

Cable			
Lc (mH/100m)	0,1	Maufacturer:	XXX
Cc (nF/100m)	15	Type:	RD Y (St) Y 2x2x0,5
Länge (m)	100		

Apparatus:	Ex-i values			
Ui (V)	40		Manufacturer:	YYY
Ii (mA)	100		Type:	BIB 562
Pi (mW)	2000		Attribute:	EEx ib d IIC T4-T6
Li (mH)	0	(ungefähr 0)	Conformity No.:	PTB Nr. Ex-85.B.2007
Ci (nF)	0	(ungefähr 0)	Amendment No.:	
			Zone:	1
			Ex.-Group:	IIC
			T.-Class:	T4-T6



Comment:

Name:		Date:		PCT Loop:		File Name:
Department:		Revision Date:		Revison:		
Verified:		Revision:		Date:		

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Figure B.14 – ED006 Ex-i calculation sheet

Rev.: 0, Dated at: XX.XX.XXXX
Printed at: 27/02/2012

Heat Loss Calculation - UPS-Room

UPS-System	Item No.:	**UPS-1**	Location:	MCC-Room
Data:	Rated Capacity		150	kVA
	Efficiency		85	% *
Heat Loss Calculation:	Heat loss capacity = Rated Capacity * (1 - Efficiency)			
	Total Heat loss capacity:		**22.5**	**kW**

* efficiency of 85% due to the additional transformers at incoming outgoing of UPS considered

UPS-System	Item No.:	**UPS-2**	Location:	MCC-Room
Data:	Rated Capacity		30	kVA
	Efficiency		85	%
Heat Loss Calculation:	Heat loss capacity = Rated Capacity * (1 - Efficiency)			
	Total Heat loss capacity:		**4.5**	**kW**

* efficiency of 85% due to the additional transformers at incoming outgoing of UPS considered

DC-System	Item No.:	**DC-1**	Location:	MCC-Room
Data:	Rated Capacity		15	A
	Efficiency		85	%
	Rated Voltage		110	V
Heat Loss Calculation:	Heat loss capacity = Rated Capacity* Rated Voltage * (1 - Efficiency)			
	Total Heat loss capacity:		**0.2475**	**kW**

* efficiency of 85% due to the additional transformers at incoming of DC considered

DC-System	Item No.:	**DC-2**	Location:	MCC-Room
Data:	Rated Capacity		100	A
	Efficiency		85	%
	Rated Voltage		110	V
Heat Loss Calculation:	Heat loss capacity = Rated Capacity* Rated Voltage * (1 - Efficiency)			
	Total Heat loss capacity:		**1.65**	**kW**

* efficiency of 85% due to the additional transformers at incoming of DC considered

GRAND TOTAL Heat Loss Capacity	**UPS-Room**	**28.8975**	**kW**

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Figure B.15 – ED007 heat dissipation summary

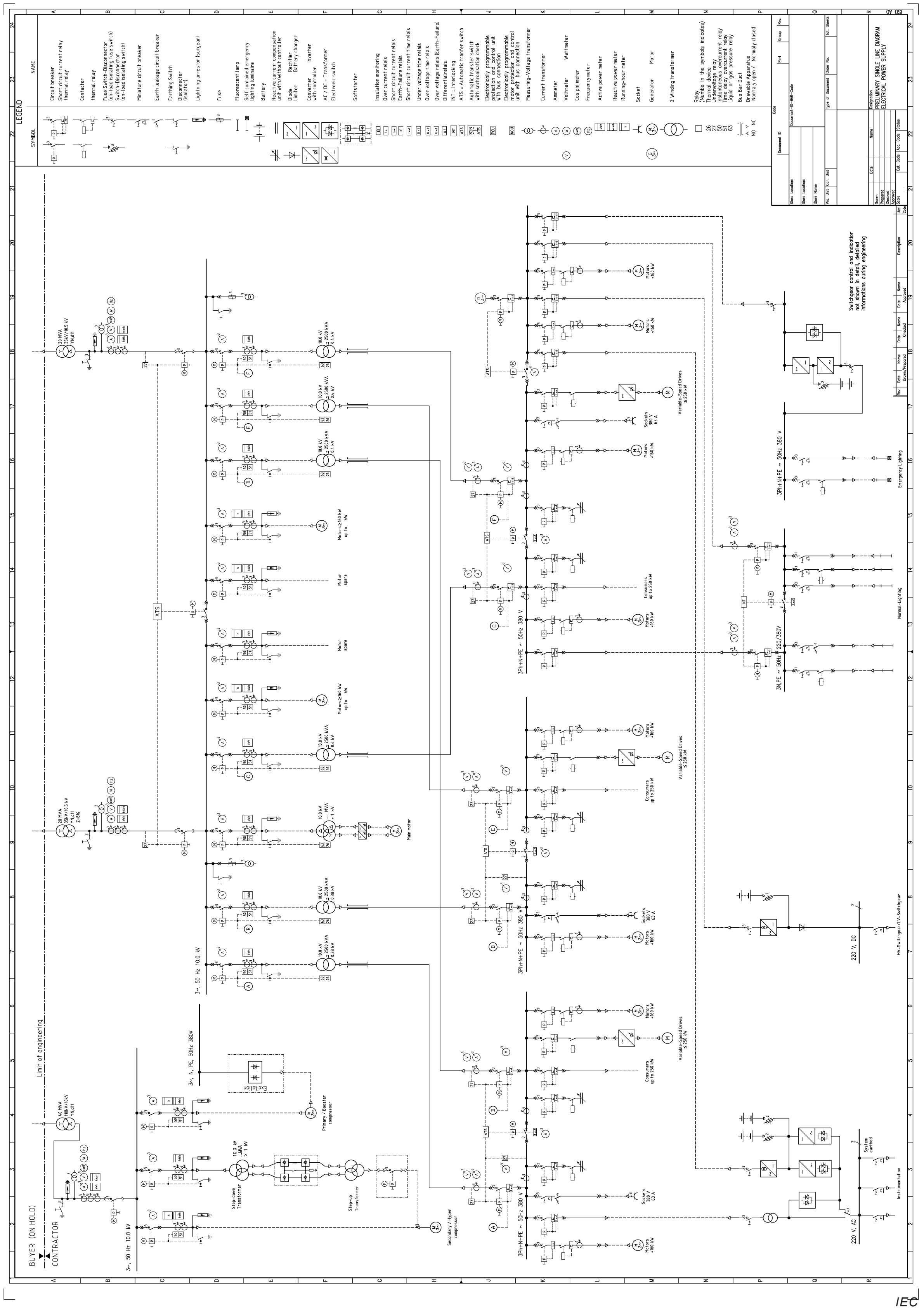

Figure B.16 – FA001 electrical single line diagram

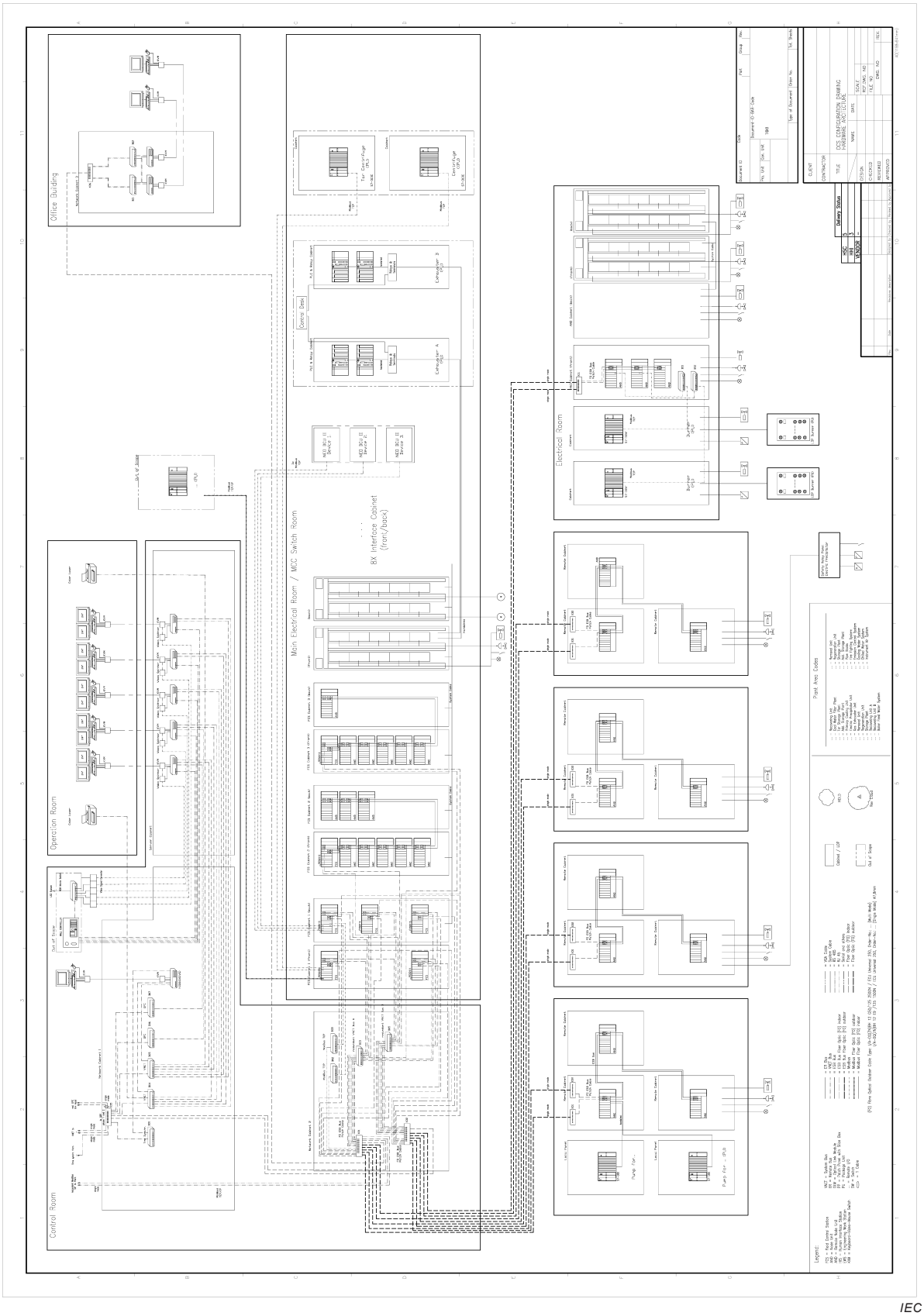

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Figure B.17 – FA002 structure diagram DCS-PLC-SIS

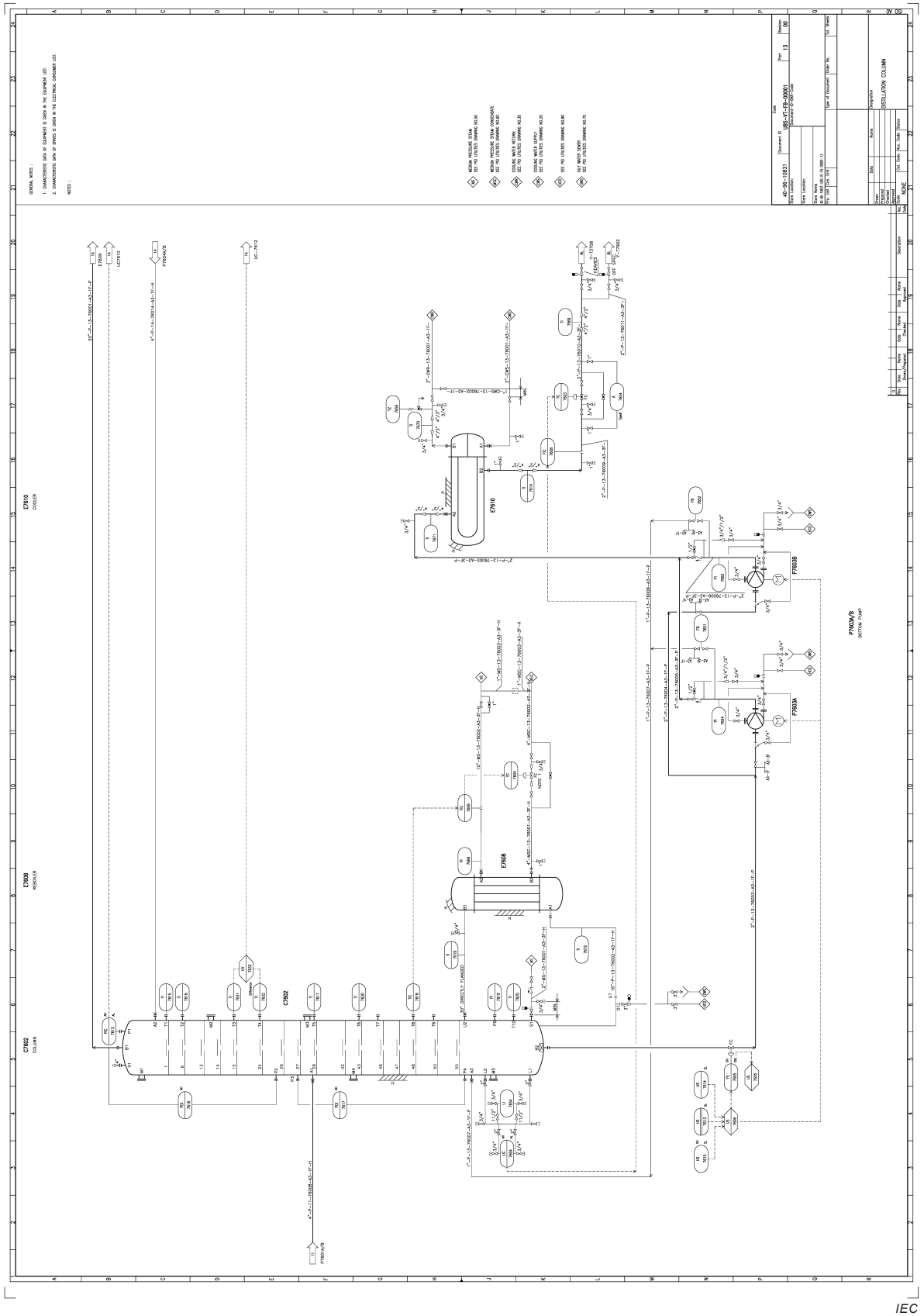

Figure B.18 – FB001 piping and instrumentation diagram (P&ID)

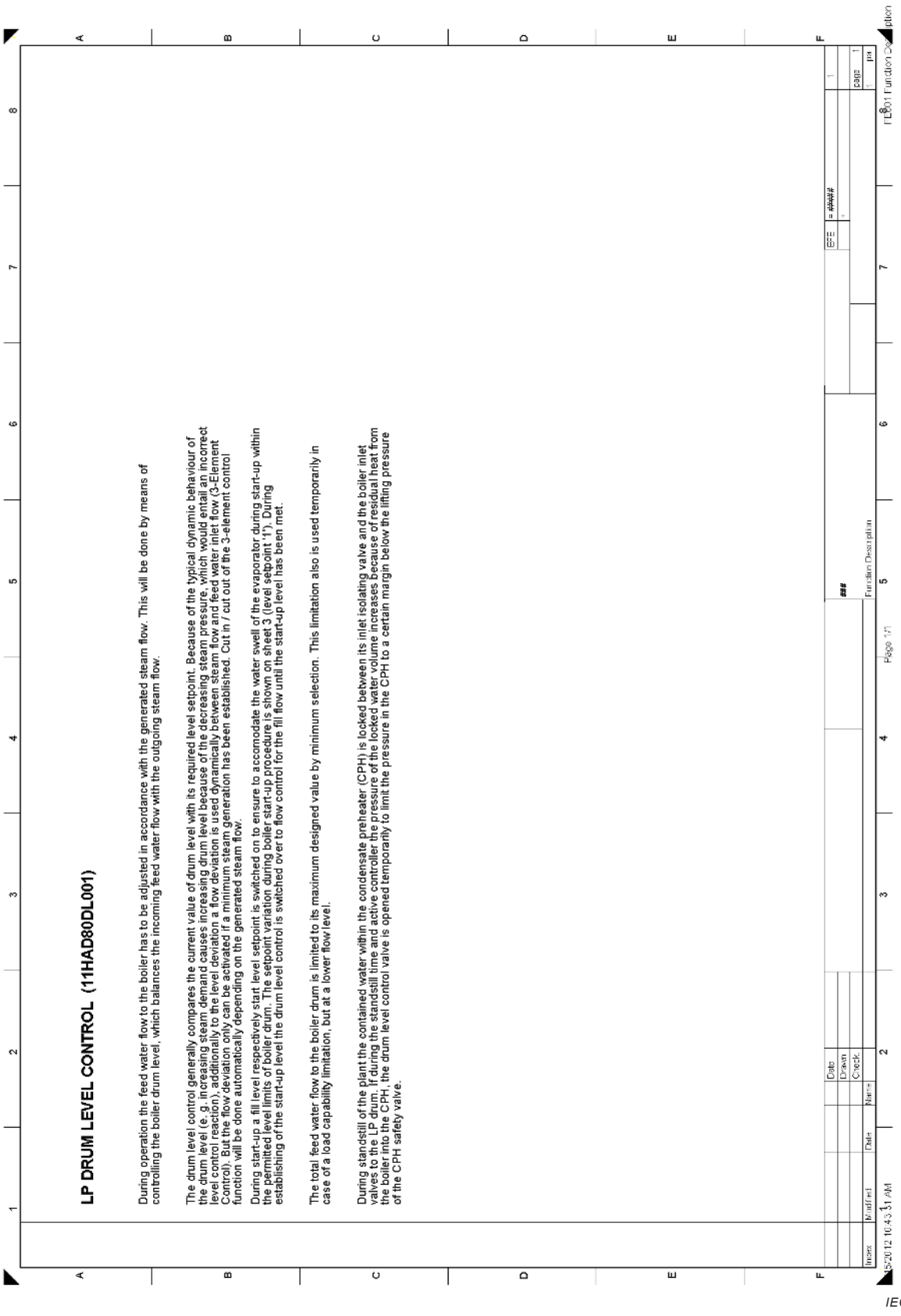

Figure B.19 – FE001 function description

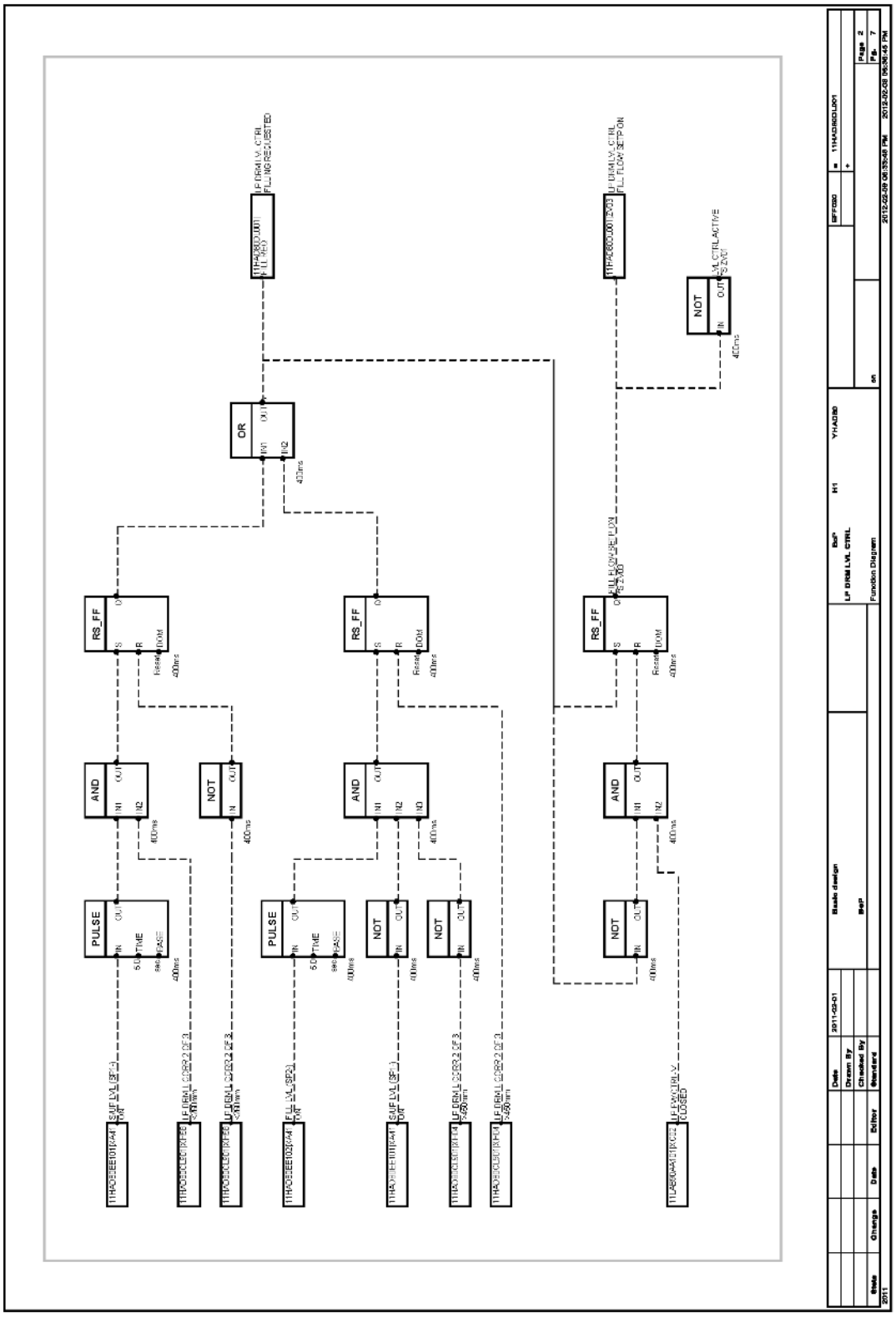

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Figure B.20 – FF001 function block diagram

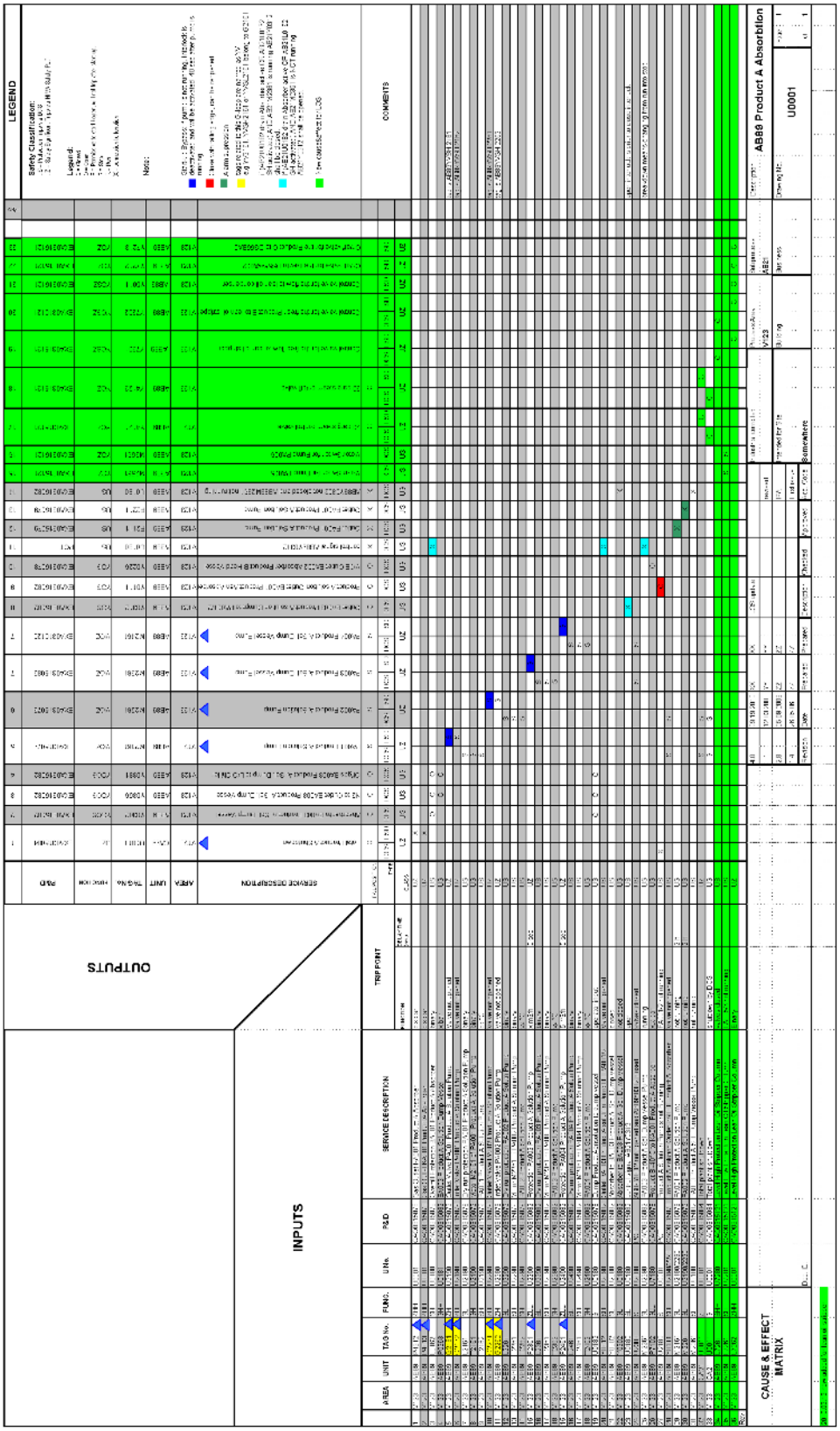

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Figure B.21 – FF002 cause and effect matrix

Loop identific.	Realisation	System	Sub system	I/O Label	PI diagram	Faceplate description			Calibration range [unit]		SIL class	
	Requirement	Signal identification	Process group	Design class	Explosion protection	Type of signal	Signal rate		Signal characteristic		Var.	R
1	2	3	4	5	6	7	8		9		10	11
A7602	DCS			AG7602	14	Product to BL						*
	PV	_	Input standard		EEx i	analogue signal	4..20 mA HART		Syst.powered		000	
F7608	DCS			FT7608	13	Heavies to BL			0.0	500.0 mbar		*
	PV	_	Input standard		EEx i	analogue signal	4..20 mA HART		Syst.powered		000	
F7609	DCS			FT7609	13	E7608 MP Steam in						*
	PV	_	Input standard		EEx i	analogue signal	4..20 mA HART		Syst.powered		000	
F7610	DCS			FT7610	14	P7604 Min. flow						*
	PV	_	Input standard		EEx i	analogue signal	4..20 mA HART		Syst.powered		000	
F7612	DCS			FT7612	14	C7602 Recycle						*
	PV	_	Input standard		EEx i	analogue signal	4..20 mA HART		Syst.powered		000	
F7613	DCS			FT7613	14	Product to BL						*
	PV	_	Input standard		EEx i	analogue signal	4..20 mA HART		Syst.powered		000	
H7613	DCS				13	P7603 Off						*
	L	_	Input standard		EEx i	binary signal	contact pot. free				000	
H7615	DCS				13	P7603 On / Off						*
	H	_	Input standard		EEx i	binary signal	contact pot. free				000	
H7615	DCS				13	P7603 On / Off						*
	L	_	Input standard		EEx i	binary signal	contact pot. free				000	
H7619	DCS				14	P7604 Off						*
	L	_	Input standard		EEx i	binary signal	contact pot. free				000	
H7620	DCS				14	P7604 Off						*
	L	_	Input standard		EEx i	binary signal	contact pot. free				000	
H7621	DCS				14	P7604 On / Off						*
	L	_	Input standard		EEx i	binary signal	contact pot. free				000	
H7621	DCS				14	P7604 On / Off						*
	H	_	Input standard		EEx i	binary signal	contact pot. free				000	
L7604	DCS			LT7604	13	C7602 Bottom			_	-		*
	PV	_	Input standard		EEx i	analogue signal	4..20 mA HART		Syst.powered		000	
L7605	DCS			LT7605	14	D7603			_	-		*
	PV	_	Input standard		EEx i	analogue signal	4..20 mA HART		Syst.powered		000	
P7615	DCS			PT7615	13	C7602 Top			_	bar a		*
	PV	_	Input standard		EEx i	analogue signal	4..20 mA HART		Syst.powered		000	
P7616	DCS			PT7616	13	C7602 upper section			_	bar a		*
	PV	_	Input standard		EEx i	analogue signal	4..20 mA HART		Syst.powered		000	
P7617	DCS			PT7617	13	C7602 lower section			_	bar a		*
	PV	_	Input standard		EEx i	analogue signal	4..20 mA HART		Syst.powered		000	

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Figure B.22 – FP001 signal list

IO Assignment
Doc. No.:
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Engineering Company
Client Company
Proj No.

Project	XXX	DCS I/O ASSIGNMENT	Customer	A
Tile	I/O Assignment for Company X		End User	B
Doc. No.			Rev	A
Sub Doc. No.			Date	16.01.2012

Sr.	Rev	CTRL	Card Type	Card Slot		DCS Tag	Field Tag	Description	IO Type	IO Range			Alarms																Signal Source	Remarks
										Min Range	Max Range	Engg unit	Alarm Req?	Alm Priority	Alm LL	Hystersis	Alarm Req?	Alm Priority	Alm L	Hystersis	Alarm Req?	Alm Priority	Alm H	Hystersis	Alarm Req?	Alm Priority	Alm HH	Hystersis		
1	B	CTRL1	AI8	1	1	A300AA30M1011_AI	A300AA30M1011RPM	Pump VA100 Speed indication	AI	0	50	Hz																	4-wire	
2	B	CTRL1	AI8	1	2	A300AA30M2011_AI	A300AA30M2011RPM	Pump VA200 Speed indication	AI	0	50	Hz																	4-wire	
3	B	CTRL1	AI8	1	3	E200ER22M1077_AI	E200ER22M1077RPM	WA100 Speed indication	AI	0	50	Hz																	4-wire	
4	B	CTRL1	AI8	1	4	V100DS30M2011_AI	V100DS30M2011RPM	Pump DS20PA200 Speed indication	AI	0	50	Hz																	4-wire	
5	1	CTRL1	AI8	1	5	C1C01CH05	SPARE	SPARE	AI	-200	200																		2-Wire	
6	1	CTRL1	AI8	1	6	C1C01CH06	SPARE	SPARE	AI	-200	200																		2-Wire	
7	1	CTRL1	AI8	1	7	C1C01CH07	SPARE	SPARE	AI	-200	200																		2-Wire	
8	1	CTRL1	AI8	1	8	C1C01CH08	SPARE	SPARE	AI	-200	200																		2-Wire	
9	1	CTRL1	AI8	2	1	C1C02CH01	SPARE	SPARE	AI	-200	200																		2-Wire	
10	1	CTRL1	AI8	2	2	C1C02CH02	SPARE	SPARE	AI	-200	200																		2-Wire	
11	1	CTRL1	AI8	2	3	C1C02CH03	SPARE	SPARE	AI	-200	200																		2-Wire	
12	1	CTRL1	AI8	2	4	C1C02CH04	SPARE	SPARE	AI	-200	200																		2-Wire	
13	1	CTRL1	AI8	2	5	C1C02CH05	SPARE	SPARE	AI	-200	200																		2-Wire	
14	1	CTRL1	AI8	2	6	C1C02CH06	SPARE	SPARE	AI	-200	200																		2-Wire	
15	1	CTRL1	AI8	2	7	C1C02CH07	SPARE	SPARE	AI	-200	200																		2-Wire	
16	1	CTRL1	AI8	2	8	C1C02CH08	SPARE	SPARE	AI	-200	200																		2-Wire	
17	0	CTRL1	Blank	3																										
18	0	CTRL1	Blank	4																										
19	1	CTRL1	AO8	5	1	A300AA30M1011_AO	A300AA30M1011SSP	Pump VA100 speed set point	AO	0	100																			
20	1	CTRL1	AO8	5	2	A300AA30M2011_AO	A300AA30M2011SSP	Pump VA200 speed set point	AO	0	100																			
21	1	CTRL1	AO8	5	3	E200ER22M1077_AO	E200ER22M1077SSP	WA100 speed set point	AO	0	100																			
22	1	CTRL1	AO8	5	4	V100DS30M2011_AO	V100DS30M2011SSP	Pump DS20PA200 speed set point	AO	0	100																			
23	1	CTRL1	AO8	5	5		C1C05CH05	SPARE	AO	0	100																			
24	1	CTRL1	AO8	5	6		C1C05CH06	SPARE	AO	0	100																			
25	1	CTRL1	AO8	5	7		C1C05CH07	SPARE	AO	0	100																			
26	1	CTRL1	AO8	5	8		C1C05CH08	SPARE	AO	0	100																			
27	1	CTRL1	AO8	6	1		C1C06CH01	SPARE	AO	0	100																			
28	1	CTRL1	AO8	6	2		C1C06CH02	SPARE	AO	0	100																			
29	1	CTRL1	AO8	6	3		C1C06CH03	SPARE	AO	0	100																			
30	1	CTRL1	AO8	6	4		C1C06CH04	SPARE	AO	0	100																			
31	1	CTRL1	AO8	6	5		C1C06CH05	SPARE	AO	0	100																			
32	1	CTRL1	AO8	6	6		C1C06CH06	SPARE	AO	0	100																			
33	1	CTRL1	AO8	6	7		C1C06CH07	SPARE	AO	0	100																			
34	1	CTRL1	AO8	6	8		C1C06CH08	SPARE	AO	0	100																			
35	1	CTRL1	AO8	7	1		C1C07CH01	SPARE	AO	0	100																			
36	1	CTRL1	AO8	7	2		C1C07CH02	SPARE	AO	0	100																			
37	1	CTRL1	AO8	7	3		C1C07CH03	SPARE	AO	0	100																			
38	1	CTRL1	AO8	7	4		C1C07CH04	SPARE	AO	0	100																			
39	1	CTRL1	AO8	7	5		C1C07CH05	SPARE	AO	0	100																			
40	1	CTRL1	AO8	7	6		C1C07CH06	SPARE	AO	0	100																			
41	1	CTRL1	AO8	7	7		C1C07CH07	SPARE	AO	0	100																			
42	1	CTRL1	AO8	7	8		C1C07CH08	SPARE	AO	0	100																			
43	B	CTRL1	AO8	8	1	E100ER11F1121	E100ER11F1121_AO	Steam 16 bar	AO																					
44	B	CTRL1	AO8	8	2	E500ER52F5246	E500ER52F5246_AO	N2 from Energy	AO																					
45	B	CTRL1	AO8	8	3	E300ER32F3276	E300ER32F3276_AO	Potable water	AO																					
46	B	CTRL1	AO8	8	4	E100ER12F1011	E100ER12F1011_AO	Condensate to External	AO																					
47	B	CTRL1	AO8	8	5	E500ER51F5176	E500ER51F5176_AO	Compressed Air	AO																					
48	B	CTRL1	AO8	8	6	E500ER50F5076	E500ER50F5076_AO	Instrument Air	AO																					
49	1	CTRL1	AO8	8	7		C1C08CH07	SPARE	AO	0	100																			
50	1	CTRL1	AO8	8	8		C1C08CH08	SPARE	AO	0	100																			
51	1	CTRL1	DI8	9	1	V200BE10M3071	V200BE10M3071RUN	VE200 Running indication	DI																				24 VDc-intorregation	
52	1	CTRL1	DI8	9	2	V200BE10M3071	V200BE10M3071FLT	VE200 Fault indication	DI																				24 VDc-intorregation	
53	1	CTRL1	DI8	9	3	V200BE10M1011	V200BE10M1011RUN	PA120 Running indication	DI																				24 VDc-intorregation	
54	1	CTRL1	DI8	9	4	V200BE10M1011	V200BE10M1011FLT	PA120 Fault indication	DI																				24 VDc-intorregation	
55	1	CTRL1	DI8	9	5	V200VA10M4371	V200VA10M4371RUN	Vacuum pump VA430 Running indication	DI																				24 VDc-intorregation	
56	1	CTRL1	DI8	9	6	V200VA10M4371	V200VA10M4371FLT	Vacuum pump VA430 Fault indication	DI																				24 VDc-intorregation	
57	1	CTRL1	DI8	9	7		C1C9CH07	SPARE	DI																				24 VDc-intorregation	
58	1	CTRL1	DI8	9	8		C1C9CH08	SPARE	DI																				24 VDc-intorregation	
59	1	CTRL1	DI8	10	1		C1C10CH1	SPARE	DI																				24 VDc-intorregation	
60	1	CTRL1	DI8	10	2		C1C10CH2	SPARE	DI																				24 VDc-intorregation	
61	1	CTRL1	DI8	10	3	V200CA20M1201	V200CA20M1201RUN	Agitator vessel CA20RA120 Running indication	DI																				24 VDc-intorregation	
62	1	CTRL1	DI8	10	4	V200CA20M1201	V200CA20M1201FLT	Agitator vessel CA20RA120 Fault indication	DI																				24 VDc-intorregation	
63	1	CTRL1	DI8	10	5	V200CA20M2001	V200CA20M2001RUN	Agitator vessel CA20RA200 Running indication	DI																				24 VDc-intorregation	
64	1	CTRL1	DI8	10	6	V200CA20M2001	V200CA20M2001FLT	Agitator vessel CA20RA200 Fault indication	DI																				24 VDc-intorregation	
65	1	CTRL1	DI8	10	7	V200KF40M1101	V200KF40M1101RUN	Agitator KF40RA110 Running indication	DI																				24 VDc-intorregation	
66	1	CTRL1	DI8	10	8	V200KF40M1101	V200KF40M1101FLT	Agitator KF40RA110 Fault indication	DI																				24 VDc-intorregation	
67	1	CTRL1	DI8	11	1	V300KF40M1101	V300KF40M1101RUN	Agitator KF40RA110 Running indication	DI																				24 VDc-intorregation	
68	1	CTRL1	DI8	11	2	V300KF40M1101	V300KF40M1101FLT	Agitator KF40RA110 Fault indication	DI																				24 VDc-intorregation	
69	1	CTRL1	DI8	11	3	V200KF40M1201	V200KF40M1201RUN	Agitator KF40RA120 Running indication	DI																				24 VDc-intorregation	
70	1	CTRL1	DI8	11	4	V200KF40M1201	V200KF40M1201FLT	Agitator KF40RA120 Fault indication	DI																				24 VDc-intorregation	
71	1	CTRL1	DI8	11	5	V200VA20M1071	V200VA20M1071RUN	Vacuum pump VA100 Running indication	DI																				24 VDc-intorregation	
72	1	CTRL1	DI8	11	6	V200VA20M1071	V200VA20M1071FLT	Vacuum pump VA100Fault indication	DI																				24 VDc-intorregation	
73	1	CTRL1	DI8	11	7	V200CA20M1101	V200CA20M1101RUN	Agitator vessel CA20RA110 Running indication	DI																				24 VDc-intorregation	
74	1	CTRL1	DI8	11	8	V200CA20M1101	V200CA20M1101FLT	Agitator vessel CA20RA110 Fault indication	DI																				24 VDc-intorregation	
75	1	CTRL1	DI8	12	1		C1C12CH1	SPARE	DI																				24 VDc-intorregation	
76	1	CTRL1	DI8	12	2		C1C12CH2	SPARE	DI																				24 VDc-intorregation	
77	1	CTRL1	DI8	12	3		C1C12CH3	SPARE	DI																				24 VDc-intorregation	
78	1	CTRL1	DI8	12	4		C1C12CH4	SPARE	DI																				24 VDc-intorregation	
79	1	CTRL1	DI8	12	5	V800TA20M2012	V800TA20M2012RUN	MPA Supply Pump PA220 Running indication	DI																				24 VDc-intorregation	
80	1	CTRL1	DI8	12	6	V800TA20M2012	V800TA20M2012FLT	MPA Supply Pump PA220 Fault indication	DI																				24 VDc-intorregation	
81	1	CTRL1	DI8	12	7	V800TA20M3012	V800TA20M3012RUN	BA Supply Pump PA320 Running indication	DI																				24 VDc-intorregation	
82	1	CTRL1	DI8	12	8	V800TA20M3012	V800TA20M3012FLT	BA Supply Pump PA320 Fault indication	DI																				24 VDc-intorregation	

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Figure B.23 – FP002 I/O list

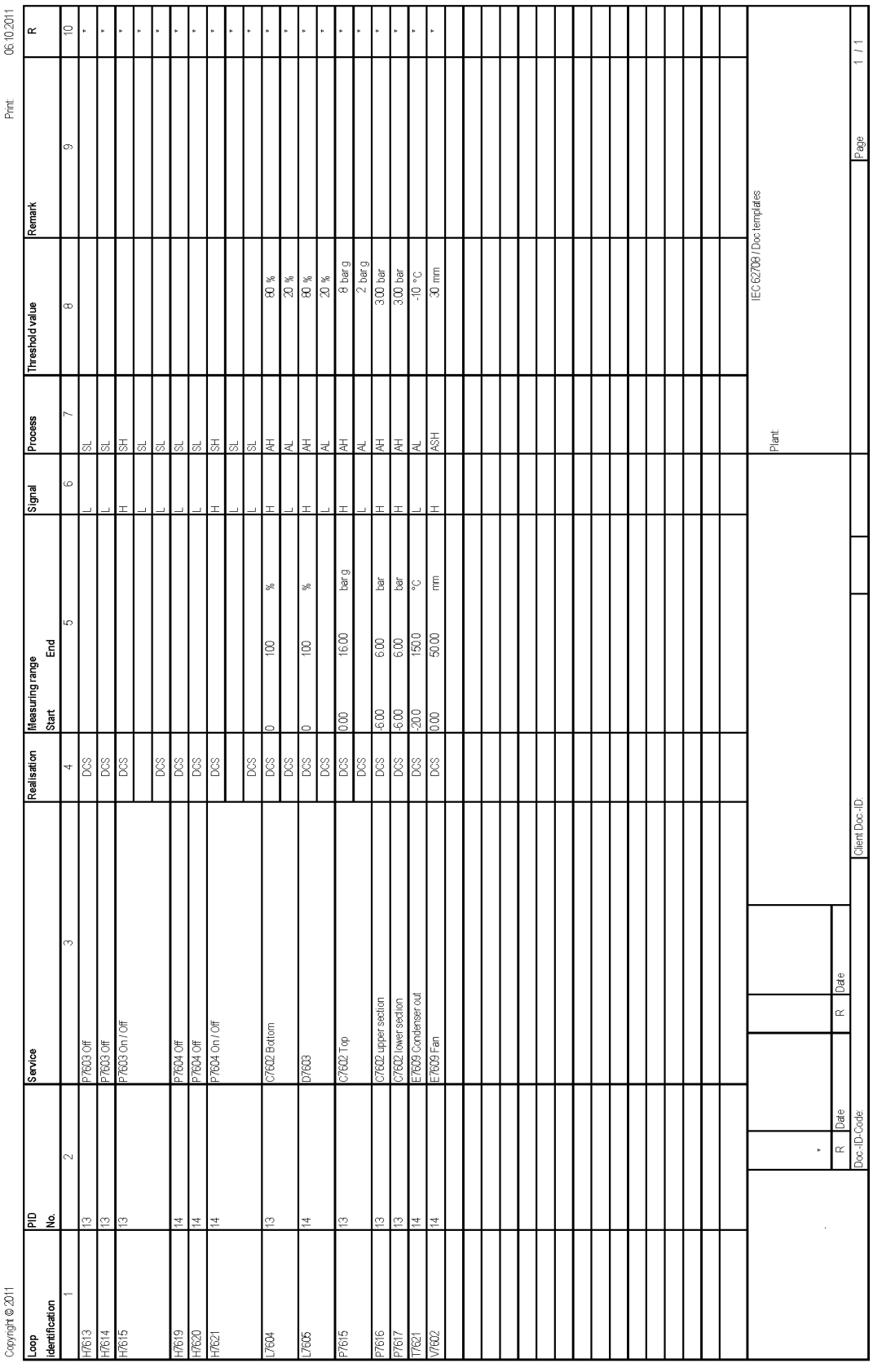

Figure B.24 – FQ001 trip point list

##company logo##	#Project#	##Customer logo##
	Configuration parameter	

Parameter list
Tag: CP001
Flue gas pressure

Name	Value	Unit	Status
Pressure P DS III			
» Identification			
» » Operation Unit			
TAG	CP001	-	-
Descriptor	FGD PD	-	-
Message	Flue gas pressure	-	-
» » Device			
Manufacturer	#Company	-	
Device Type	Pressure Trans	-	
HART Device ID	0	-	
Distributor	#Company	-	
Device order number		-	-
Universal Revision	5	-	
Device Revision	1	-	
Software Revision	1	-	
Hardware Revision	1	-	
Final Assembly Number	1	-	
Sensor Type	Differential (DP) PN 160	-	
Sensor Serial Number	0	-	
Date	01.04.2010	-	-
» Input			
» » Unit and measuring Speed			
Unit (Measured Value)	mbar	-	
Cycle time	90 ms	-	
» » Measuring Limits			
Lower Value Min	-60,00	mbar	
Upper Value Max	60,00	mbar	
Measuring Range Min	1,00	mbar	
» » Process Value Scale			
Lower Value	0,000	mbar	
Upper Value	40,000	mbar	-
» Output			
» » Analog Output			
» » » Limits			
Analog Output Lower Endpoint Value	3,84	mA	
Analog Output Upper Endpoint Value	20,50	mA	
» » » Alarm States			
Analog Output Alarm Type	Low	-	
Alarm LRV	3,60	mA	
Alarm URV	22,80	mA	
» » Damping			
Damping	0,10	s	

Doc.: xxxx&EFQ/02F01_
Template issued: 25.3.2011 / Version: V1.2
© < COMPANY> Seite 1 von 3 Configuration parameter list.doc

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Figure B.25 – FQ002 configuration parameter list

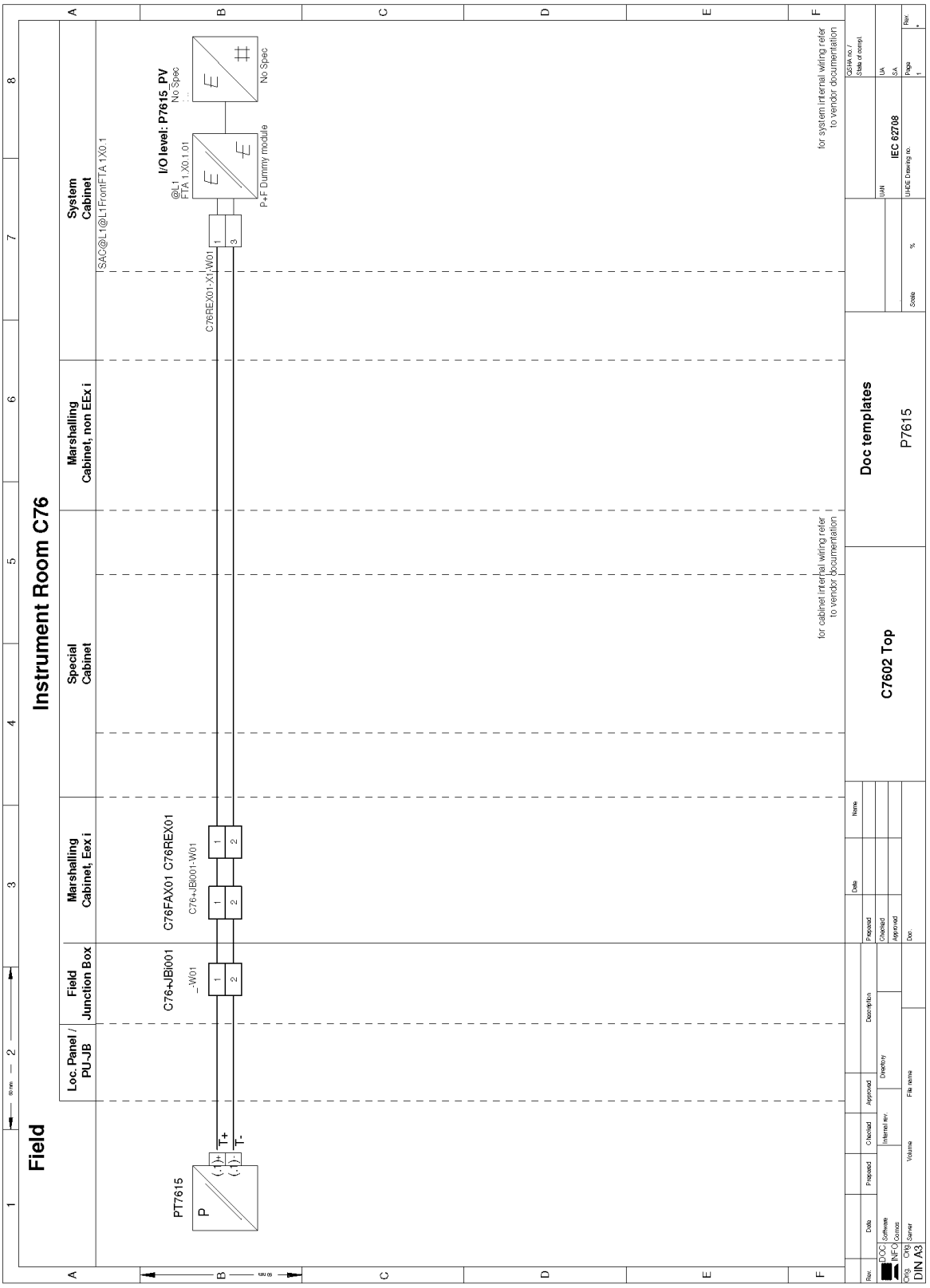

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Figure B.26 – FS002 loop diagram

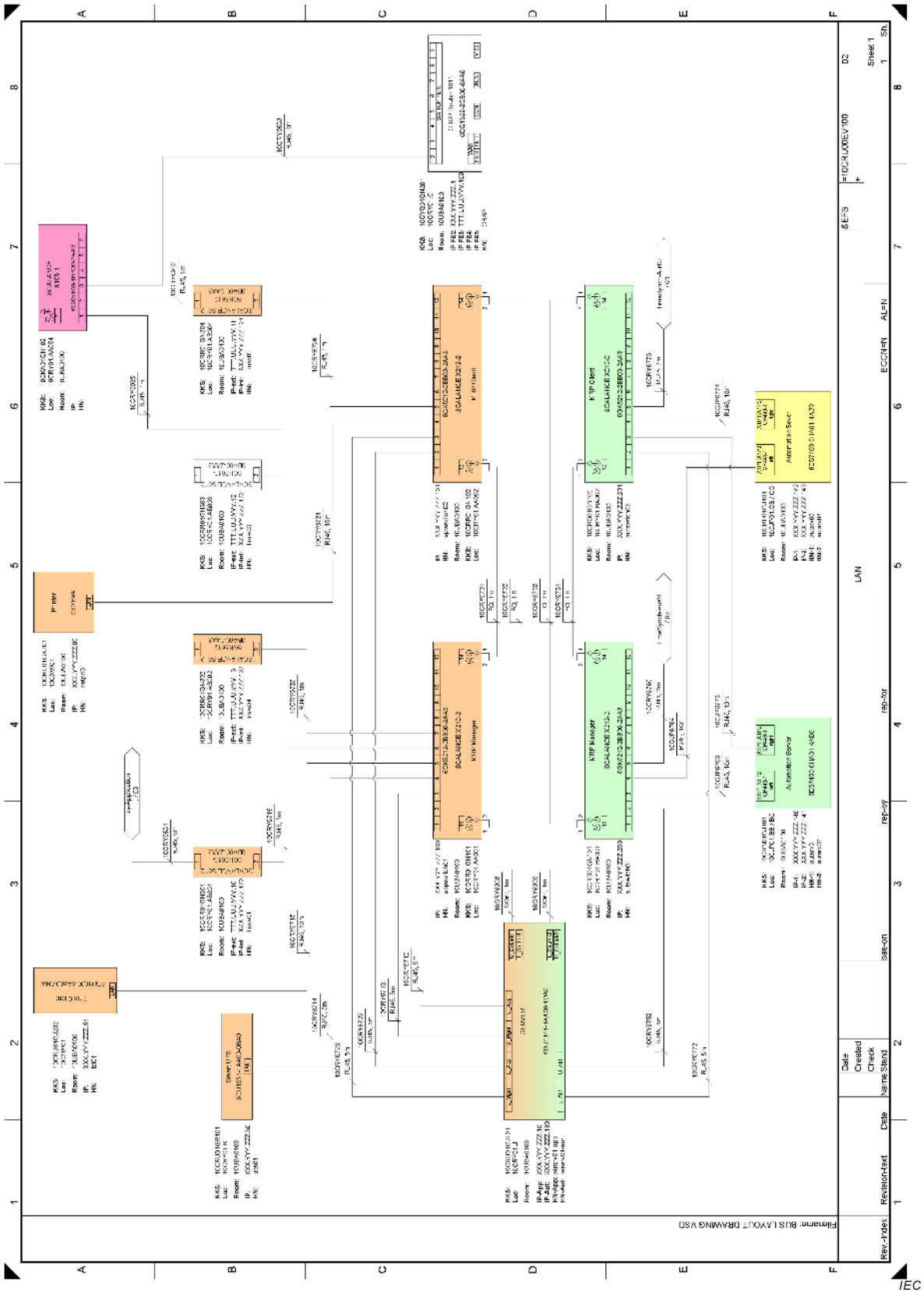

Figure B.27 – FS003 bus layout drawing

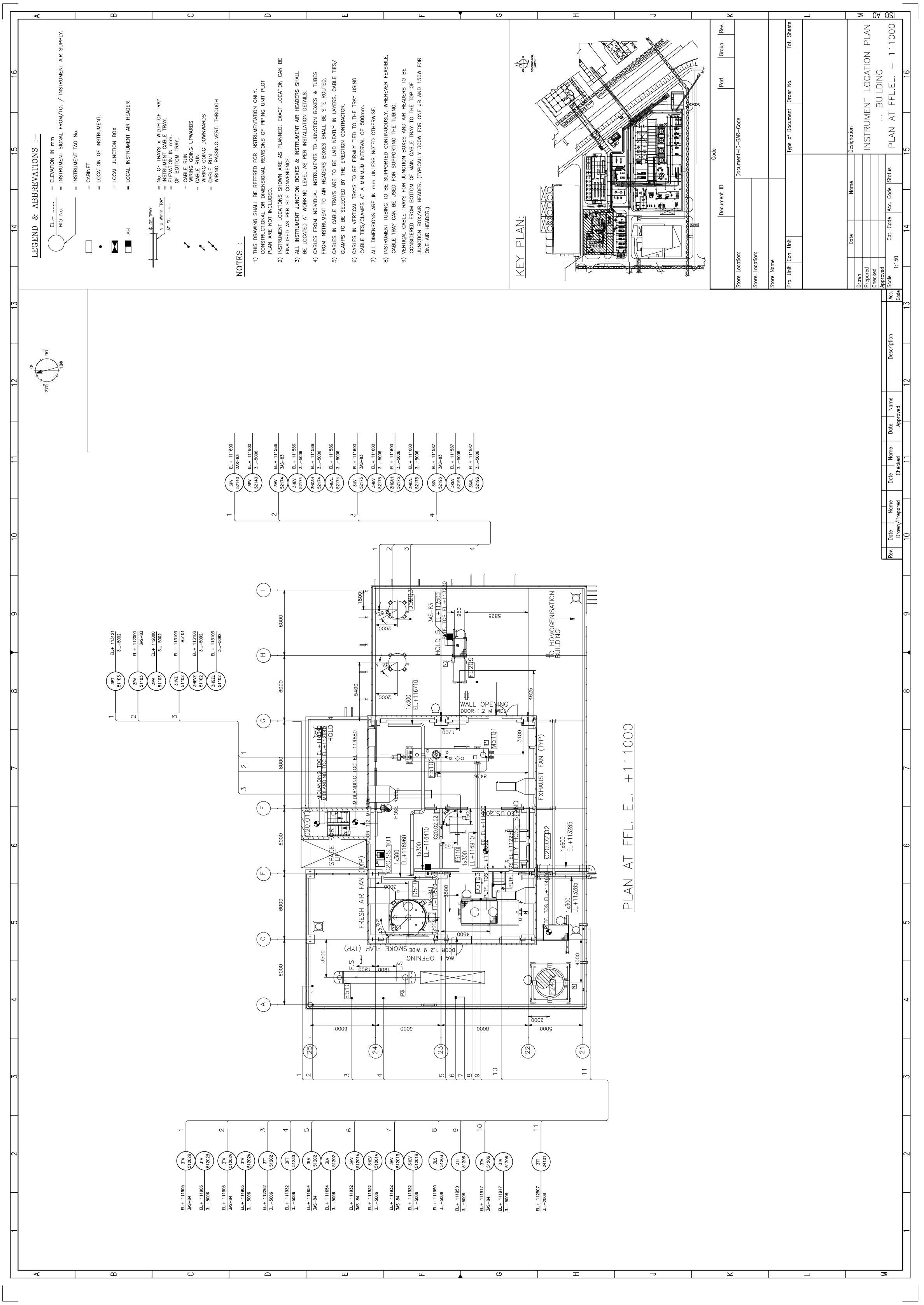

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Figure B.28 – LD003 plot plan E&I

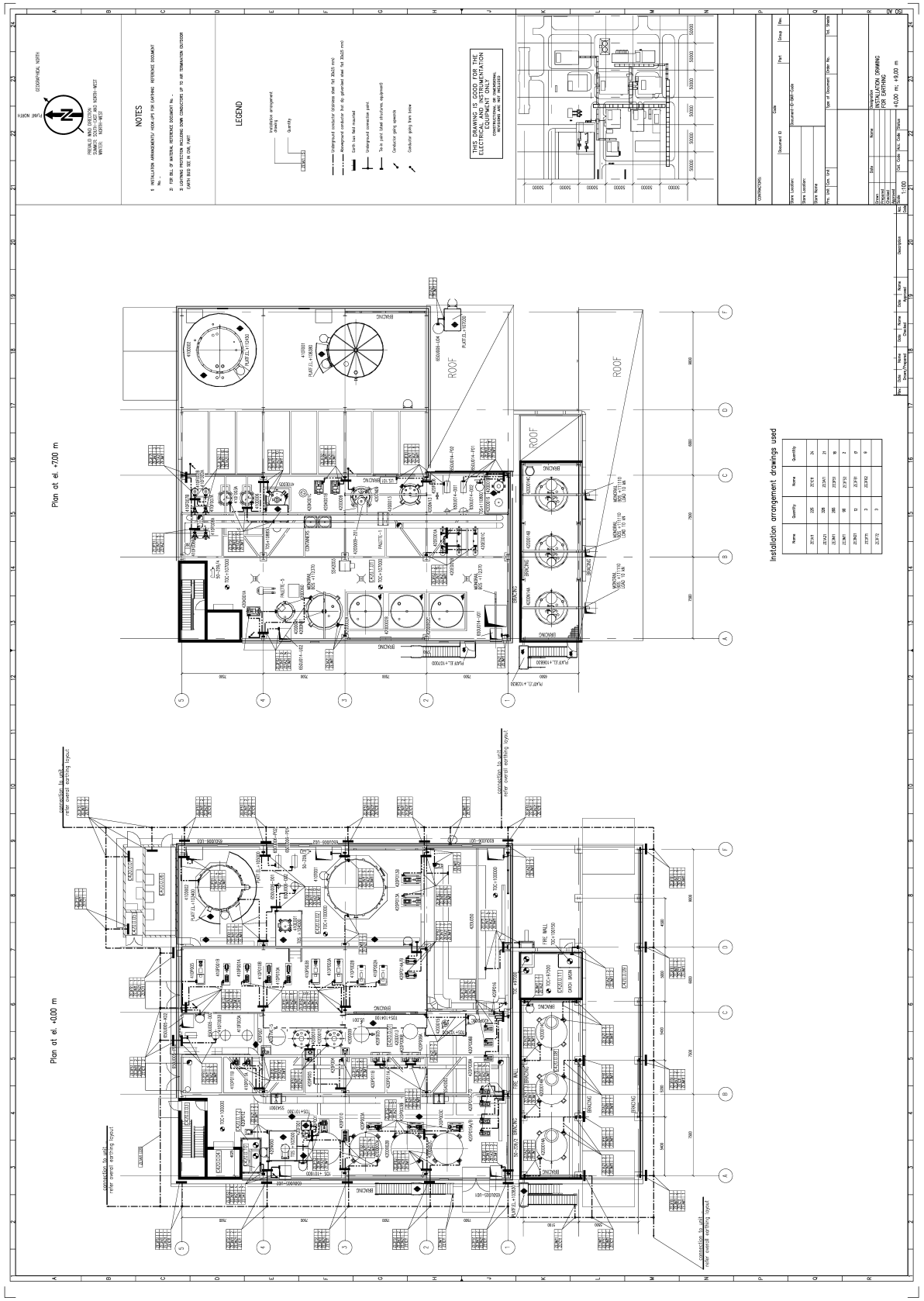

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Figure B.29 – LD006 arrangement drawing

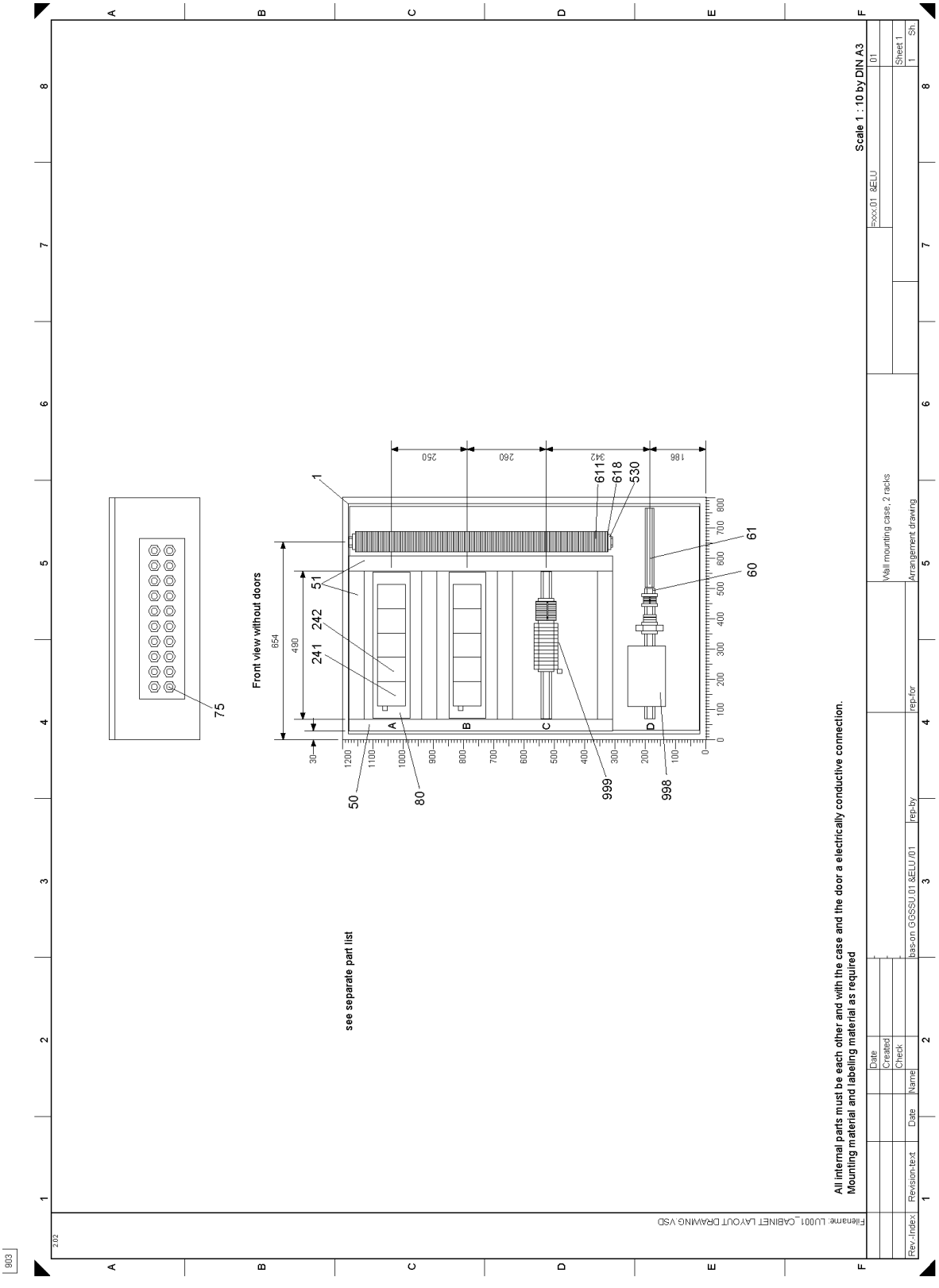
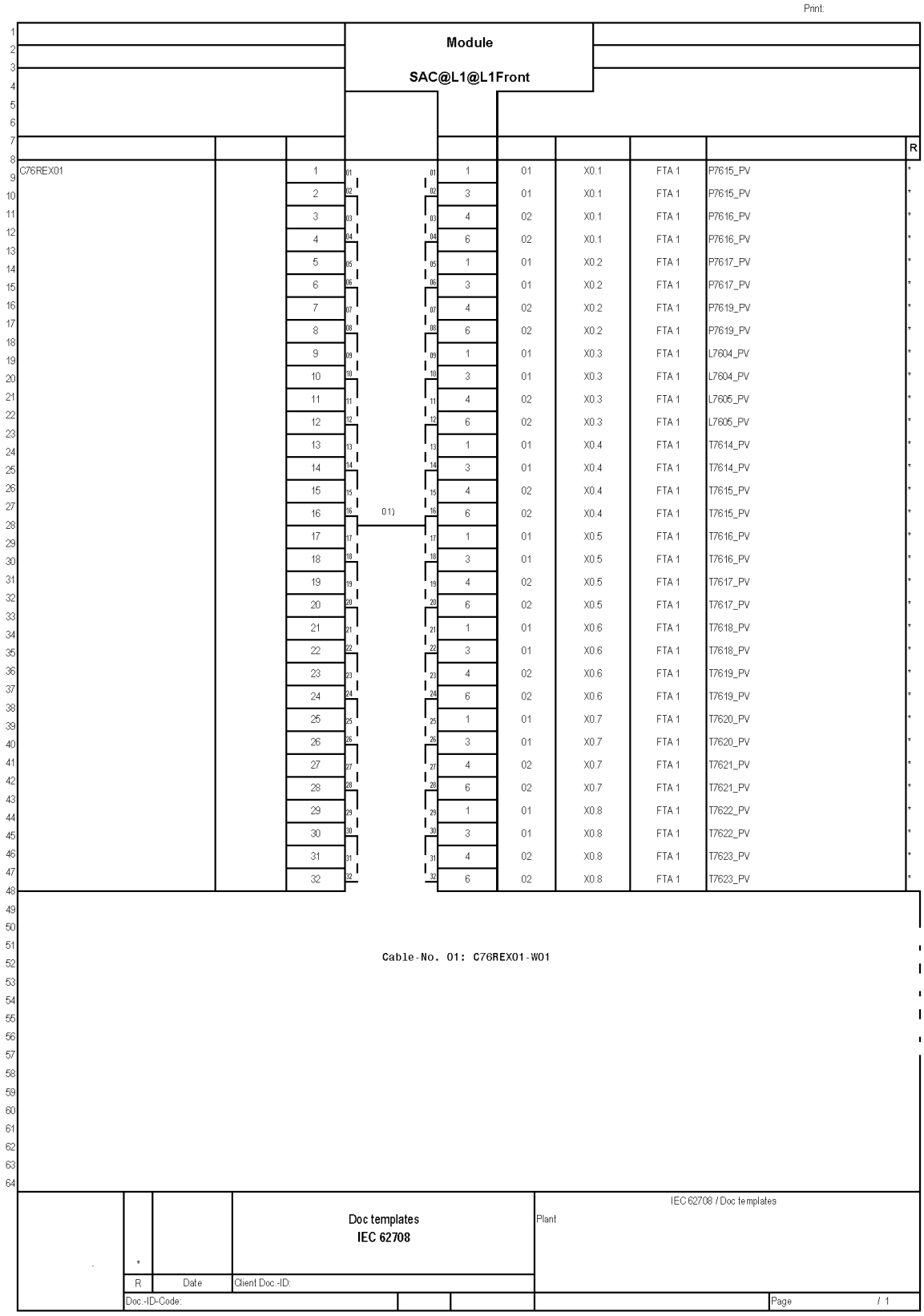


Figure B.30 – LU001 cabinet layout drawing



C76REX01	1	1	01	X0.1	FTA 1	P7615_PV	*
	2	3	01	X0.1	FTA 1	P7615_PV	*
	3	4	02	X0.1	FTA 1	P7616_PV	*
	4	6	02	X0.1	FTA 1	P7616_PV	*
	5	1	01	X0.2	FTA 1	P7617_PV	*
	6	3	01	X0.2	FTA 1	P7617_PV	*
	7	4	02	X0.2	FTA 1	P7619_PV	*
	8	6	02	X0.2	FTA 1	P7619_PV	*
	9	1	01	X0.3	FTA 1	L7604_PV	*
	10	3	01	X0.3	FTA 1	L7604_PV	*
	11	4	02	X0.3	FTA 1	L7605_PV	*
	12	6	02	X0.3	FTA 1	L7605_PV	*
	13	1	01	X0.4	FTA 1	T7614_PV	*
	14	3	01	X0.4	FTA 1	T7614_PV	*
	15	4	02	X0.4	FTA 1	T7615_PV	*
	16	6	02	X0.4	FTA 1	T7615_PV	*
	17	1	01	X0.5	FTA 1	T7616_PV	*
	18	3	01	X0.5	FTA 1	T7616_PV	*
	19	4	02	X0.5	FTA 1	T7617_PV	*
	20	6	02	X0.5	FTA 1	T7617_PV	*
	21	1	01	X0.6	FTA 1	T7618_PV	*
	22	3	01	X0.6	FTA 1	T7618_PV	*
	23	4	02	X0.6	FTA 1	T7619_PV	*
	24	6	02	X0.6	FTA 1	T7619_PV	*
	25	1	01	X0.7	FTA 1	T7620_PV	*
	26	3	01	X0.7	FTA 1	T7620_PV	*
	27	4	02	X0.7	FTA 1	T7621_PV	*
	28	6	02	X0.7	FTA 1	T7621_PV	*
	29	1	01	X0.8	FTA 1	T7622_PV	*
	30	3	01	X0.8	FTA 1	T7622_PV	*
	31	4	02	X0.8	FTA 1	T7623_PV	*
	32	6	02	X0.8	FTA 1	T7623_PV	*

Figure B.31 – MA001 terminal connection diagram

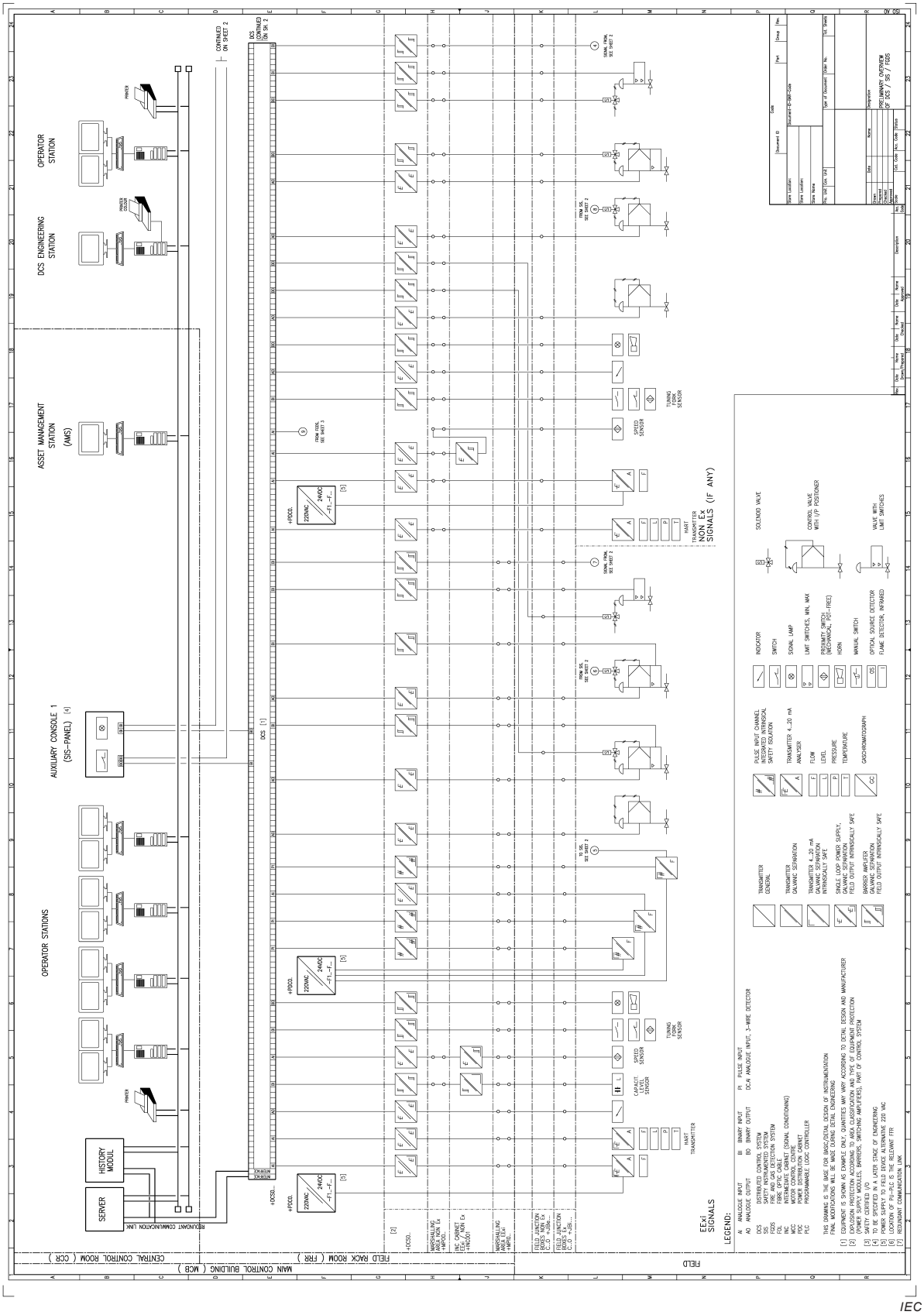


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Figure B.32 – MA003 conceptual wiring diagram

MB001_PowerCableCablelist

print:
Page:

					Instrument Engineering Cable list "Power Cable"					
		R	Datum	Name				Code		
								Unit		
		Doc.-ID-Code:					Client:			
1	2	3	4	5	6	7	8	9	10	11
lfd. No.	Cable No.	from Equipment	to Equipment	Part No	Type of Cable	Length	Unit	Supplier	Remark	revision
107	3CP...5007.2	C20+3...5007	C50+3PDC02.X201		NYCY 2x 2,5/2,5 mm^2,	98	Meter		New	0
108	3CP...5021.2	3...5021	C50+3PDC02.X201		NYCY 2x 4/4 mm^2,	450	Meter			0
109	3CP...5022.2	3...5022	C50+3PDC02.X201		NYCY 2x 4/4 mm^2,	450	Meter			0
110	3CP...6001.2	C12+3...6001	C50+3PDC02.X201		NYCY 2x 2,5/2,5 mm^2,	132	Meter			0
111	3CP...6002.2	C40+3...6002	C50+3PDC02.X201		NYCY 2x 2,5/2,5 mm^2,	58	Meter			0
112	3CP...6003.2	C12+3...6003	C50+3PDC02.X201		NYCY 2x 2,5/2,5 mm^2,	78	Meter			0
113	3CP...7001.2	C12+3...7001	C50+3PDC02.X201		NYCY 2x 2,5/2,5 mm^2,	135	Meter			0
114		Server Cabinet	C50+3PDC02.X301		NYCY 2x 2,5/2,5 mm^2,		Meter		Spare	0
115		Aux.Cabinet	C50+3PDC02.X301		NYCY 2x 2,5/2,5 mm^2,	128	Meter			0
116	3CP...0091.2	C70+3...0091	C50+3PDC02.X301		NYCY 2x 2,5/2,5 mm^2,	93	Meter			0
117	3CP...1091.2	C11+3...1091	C50+3PDC02.X301		NYCY 2x 2,5/2,5 mm^2,	153	Meter			0
118	3CP...2091.2	C13+3...2091	C50+3PDC02.X301		NYCY 2x 2,5/2,5 mm^2,	101	Meter			0
119	3CP...2092.2	C13+3...2092	C50+3PDC02.X301		NYCY 2x 4/4 mm^2,	117	Meter			0
120	3CP...3091.2	C12+3...3091	C50+3PDC02.X301		NYCY 2x 2,5/2,5 mm^2,	132	Meter			0
121	3CP...3092.2	C12+3...3092	C50+3PDC02.X301		NYCY 2x 2,5/2,5 mm^2,	142	Meter			0
122	3CP...4091.2	3...4091	C50+3PDC02.X301		NYCY 2x 4/4 mm^2,	430	Meter		OSBL	0
123	3CP...5091.2	C20+3...5091	C50+3PDC02.X301		NYCY 2x 2,5/2,5 mm^2,	75	Meter			0
124	3CP...5092.2	C20+3...5092	C50+3PDC02.X301		NYCY 2x 2,5/2,5 mm^2,	82	Meter			0
125	3CP...6091.2	C40+3...6091	C50+3PDC02.X301		NYCY 2x 2,5/2,5 mm^2,	58	Meter			0
126	3CP...6092.2	3...6092	C50+3PDC02.X301		NYCY 2x 2,5/2,5 mm^2,	HOLD	Meter		Deleted	0
127	3CP...7091.2	C12+3...7091	C50+3PDC02.X301		NYCY 2x 2,5/2,5 mm^2,	142	Meter			0
128	3CP...9901.2	C13+3...9901	C50+3PDC02.X301		NYCY 2x 2,5/2,5 mm^2,	176	Meter			0
129	3CP...9904.2	C50+3...9904	C50+3PDC02.X301		NYCY 2x 2,5/2,5 mm^2,	60	Meter			0
130	3CP...9903.2	C50+3...9903	C50+3PDC02.X301		NYCY 2x 2,5/2,5 mm^2,	40	Meter			0
131	3CP...9992.2	C50+3...9992	C50+3PDC02.X301		NYCY 2x 2,5/2,5 mm^2,	60	Meter			0
132	3CP...9993.2	C50+3...9993	C50+3PDC02.X301		NYCY 2x 2,5/2,5 mm^2,	60	Meter			0
133	3CP...9991.2	C50+3...9991	C50+3PDC02.X301		NYCY 2x 2,5/2,5 mm^2,	40	Meter			0
134	3CP.DCS01.2	C50+3DCS01	C50+3PDC02.X301		NYCY 2x 2,5/2,5 mm^2,	40	Meter			0
135	3CP.LCT1.1	3-LCC-1	C50+3PDC03.X101		NYCY 2x 2,5/2,5 mm^2,	40	Meter			0
136		MES Interface OPC ENG	C50+3PDC03.X101		NYCY 2x 2,5/2,5 mm^2,		Meter		Spare	0
137	3CP.C50.X04.1	C50-B01-X04	C50+3PDC03.X201		NYCY 2x 2,5/2,5 mm^2,	40	Meter			0
138	3CP.C50.X03.1	C50+B01-X03	C50+3PDC03.X101		NYCY 2x 2,5/2,5 mm^2,	40	Meter			0
139		Smart MCC EWS Eng	C50+3PDC03.X101		NYCY 2x 2,5/2,5 mm^2,		Meter		Spare	0
140	3CP.C50.X02.1	C50+B01-X02	C50+3PDC03.X101		NYCY 2x 2,5/2,5 mm^2,	40	Meter			0
141	3CP.FT00104	3FT00104	C50+3PDC03.X101		NYCY 2x 2,5/2,5 mm^2,	113	Meter			0
142	3CP.FT00111	3FT00111	C50+3PDC03.X101		NYCY 2x 2,5/2,5 mm^2,	113	Meter			0
143	3CP.FT00125	3FT00125	C50+3PDC03.X101		NYCY 2x 2,5/2,5 mm^2,	113	Meter			0
144	3CP.FT00126	3FT00126	C50+3PDC03.X101		NYCY 2x 2,5/2,5 mm^2,	90	Meter			0
145	3CP.FT00127	3FT00127	C50+3PDC03.X101		NYCY 2x 2,5/2,5 mm^2,	113	Meter			0
146	3CP.FT00128	3FT00128	C50+3PDC03.X101		NYCY 2x 2,5/2,5 mm^2,	90	Meter			0
147	3CP.FT00141	3FT00141	C50+3PDC03.X101		NYCY 2x 2,5/2,5 mm^2,	BY UBS	Meter		OSBL	0
148	3CP.FT11301	3FT11301	C50+3PDC03.X101		NYCY 2x 2,5/2,5 mm^2,	160	Meter			0
149	3CP.LCT3.1	3-LCT-3	C50+3PDC03.X201		NYCY 2x 2,5/2,5 mm^2,	40	Meter			0
150		OP Station	C50+3PDC03.X201		NYCY 2x 2,5/2,5 mm^2,	118	Meter			0
151		OP Station	C50+3PDC03.X201		NYCY 2x 2,5/2,5 mm^2,	141	Meter			0
152	3CP.ANA23.1	3ANA23.X01	C50+3PDC03.X201		NYCY 2x 2,5/2,5 mm^2,	133	Meter			0
153	3CP.ANA24.1	3ANA24.X01	C50+3PDC03.X201		NYCY 2x 2,5/2,5 mm^2,	110	Meter			0
154	3CP.ANA25.1	3ANA25.X01	C50+3PDC03.X201		NYCY 2x 2,5/2,5 mm^2,	171	Meter			0
155	3CP.ANA26.1	3ANA26.X01	C50+3PDC03.X201		NYCY 2x 2,5/2,5 mm^2,	133	Meter			0
156	3CP.FT11302	3FT11302	C50+3PDC03.X201		NYCY 2x 2,5/2,5 mm^2,	160	Meter			0
157	3CP.FT11308	3FT11308	C50+3PDC03.X201		NYCY 2x 2,5/2,5 mm^2,	156	Meter			0
158	3CP.FT11309	3FT11309	C50+3PDC03.X201		NYCY 2x 2,5/2,5 mm^2,	156	Meter			0
159	3CP.FT11420	3FT11420	C50+3PDC03.X201		NYCY 2x 2,5/2,5 mm^2,	112	Meter			0

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Figure B.33 – MB001 cable list

Project

Cable Laying List
acc. IEC 62708

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Cable No.	Start at	End at	Section A				Section B				Section C				Section D			Section E			Section F		number of cable	Remark	R
			E1	MR		MR	E1				E1	MR			E1/MR			E1	MR		E1	MR			
33G002-M01-B12-W1S	33G002-M01	=37+BU01.1	X				X																01		00
33G002-M01-W1N	33G002-M01	=37+BU01.1	X				X																01		00
33G010CC01-W1N	33G010+CC01	=37+CC01	X								X							X					02		00
33G010-M01.M1-W1N	33G010-M01.M1	=37+BU01.2	X								X												01		00
33G010-M01-B12-W1S	33G010-M01	=37+BU01.2	X								X												01		00
33G010-M01-W1N	33G010-M01	=37+BU01.2	X								X												01		00
33G010-M02.M1-W1N	33G010-M02.M1	=37+BU01.2	X								X												01		00
33G010-M02-B12-W1S	33G010-M02	=37+BU01.2	X								X												01		00
33G010-M02-W1N	33G010-M02	=37+BU01.2	X								X												01		00
33G040-M01-B12-W1S	33G040-M01	=37+BU01.2	X								X							X					01		00
33G040-M01-W1N	33G040-M01	=37+BU01.2	X								X							X					01		00
33G071CC01-W1N	33G071+CC01	=37+CC01	X								X							X					01		00
33G071Z01CC01-W1N	33G071-Z01+CC01	=37+CC01	X								X							X					01		00
33H010ACC01-W1N	33H010A+CC01	=37+CC01	X								X				X								01		00
33H010BCC01-W1N	33H010B+CC01	=37+CC01	X								X				X								01		00
33H070CC01-W1N	33H070+CC01	=37+CC01	X								X							X			X		01		00
33H071CC01-W1N	33H071+CC01	=37+CC01	X								X							X			X		01		00
33H072CC01-W1N	33H072+CC01	=37+CC01	X								X							X			X		01		00
33S050CC01/01-W1N	33S050+CC01/01	=37+CC01	X								X							X					01		00
33S050CC01/03-W1N	33S050+CC01/03	=37+CC01	X								X							X					01		00
33S050CC01/04-W1N	33S050+CC01/04	=37+CC01	X								X							X					01		00
33S050CC01/05-W1N	33S050+CC01/05	=37+CC01	X								X							X					01		00

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Figure B.34 – MB002 cable laying list

Single Material CODE	DESCRIPTION Single Material	Additional description	Size	Material	Rev 0	Unit	Hook up no. 132.2A	132.2C	134.2A	160.2A	160.2d (1/2" monoflange)	160.2B	160.2C	162.2A	162.2D (1/2" monoflange)	Single Material Total
					Quantity hook ups		2.00	4.00	2.00	21.00	0.00	2.00	2.00	23.00	7.00	
3A02.001	Tube 12mm OD X 1mm Thk	Tube 12mmOD	12mm OD X 1mm	1.4571	8844	Meters	12	12	30	0.5	0.5	6	6	0.5		67.5
3A02.002	Tube 6mm OD X 1mm Thk, Prefabricated single length tube, Heat Traced	Prefabricated Tube 6mmOD	6mm OD X 1mm	1.4571	360	Meters										0
3A02.003	Tube 6mm OD X 1mm Thk,SS316L Tube	Tube 6mmOD	6mm OD X 1mm	1.4571	550	Meters										0
3B01.029	Metal compression fittings, Gyrolok MMRS	Male connector with parallel pipe	12mm ODx1/4"	1.4571	404	nos.			2	1	1	2	2	1		9
3B01.031	Metal compression fittings, Gyrolok MMRS	Male connector with parallel pipe	12mm ODX1/2"	1.4571	464	nos.	4	4	4							12
3B04.001	Metal compression fittings, Gyrolok MMRS	Plug	12mm OD	1.4571	300	nos.	2	2	2	1	1			1		9
3B06.003	Syphon with G 1/2 male connection on process side and G 1/2 female connection on instrument side	Syphon	G 1/2 (M) X G 1/2 (F)	1.4571	15	nos.										0
3C01.001	1/2" Flange ANSI150 RF, output 12mm Gyrolok		1/2" flange ANSI 150	1.4571	12	nos.						1				1
3C01.002	1/2" Flange ANSI300 RF, output 12mm Gyrolok		1/2" flange ANSI 300	1.4571	10	nos.			1				1			2
3D01.001	Manifold, three-way direct mounting, pipe thread, austentic stainless steel cofirm PED and rules for pressure vessels	Manifold, three-way	G 1/2 (F)	1.4571	10	nos.										0
3D11.001	Monoflange with instument and vent valve, direct mounting flange NPS 1", class 300/600 Thread G1/2 internal. Monoflange with G1/2" Plug	Monoflange	As per PD 3.5.7_261. 2EB.21		269	nos.	2	2	2	1		1	1	1		10
3D11.003	Monoflange with instument and vent valve, direct mounting flange NPS 1", class 1500 Thread G1/2 internal. Monoflange with G1/2" Plug	Monoflange	As per PD 3.5.7_261. 2EB.21		1	nos.										0
3D12.001	Monoflange with instument and vent valve, direct mounting flange NPS 1", class 300/600 Thread G1/2 internal. Monoflange with G1/2" Plug	Monoflange with Locked open valve for process connection and locked close instrument-	As per PD 3.5.7_261. 2EB.21		4	nos.										0
3L01.001	Instrument-protection box, plastic	protection box, plastic	Big box ca 400X250		14	nos.										0
3X01.001	Metal compression fittings, Gyrolok MMRS	Tubing union 12 mm OD	12 mm OD	1.4571	1342	nos.		2	5							7
3X01.002	Metal compression fittings, Gyrolok MMRS	Union Tee 12 mm OD	12mmOD X 12mmOD	1.4571	20	nos.	2	2	2							6

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Figure B.35 – PA001 material take off

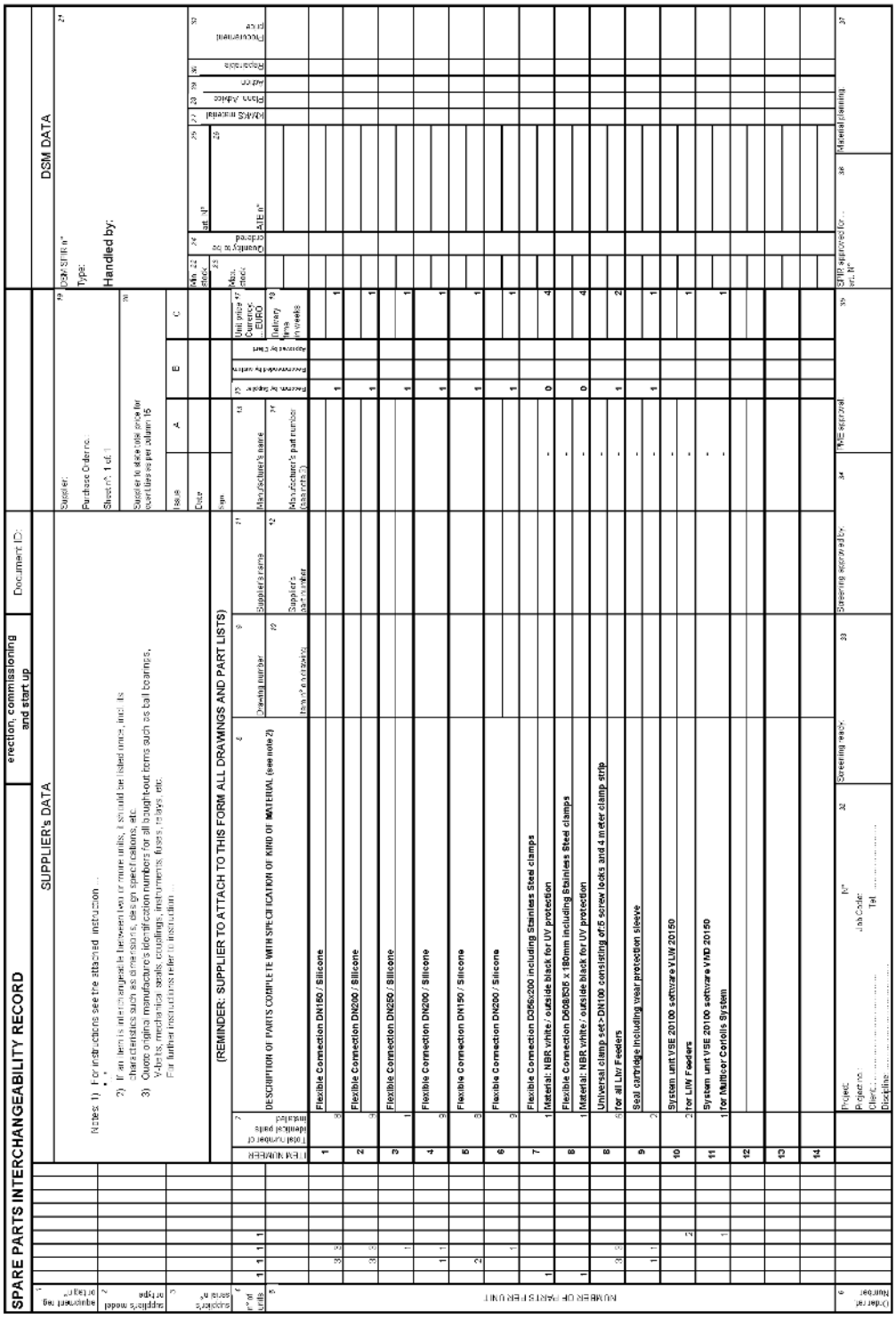

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Figure B.36 – PB001 spare parts list

 Print: 15.09.11

1	Loop-	PID No.	TAG No.	Description	Part no.	SIL	DATASHEET		R
2	Identification						R	Date	
3	1	2	3	4	8	9	5	6	7
4	A7602	14	AQ7602	Hydrocarbon	QAAM001				
5				analyzer					
6	A7654	13	AT7654	Manual sampling system	QCAA001				
7	F7608	13	FE7608	Orifice plate assembly	KFAA001				
8			FT7608	Flow dP-transmitter	KFEA001				
9	F7609	13	FE7609	Orifice plate assembly	KFAA001				
10			FT7609	Flow dP-transmitter	KFEA001				
11	F7610	14	FE7610	Orifice plate assembly	KFAA001				
12			FT7610	Flow dP-transmitter	KFEA001				
13	F7612	14	FE7612	Orifice plate assembly	KFAA001				
14			FT7612	Flow dP-transmitter	KFEA001				
15	F7613	14	FE7613	Orifice plate assembly	KFAA001				
16			FT7613	Flow dP-transmitter	KFEA001				
17	F7651	13	FO7651	Restriction orifice	MT00001				
18	F7652	13	FO7652	Restriction orifice	MT00001				
19	H7613	13	HS7613	Operation device (field mount.)	TEA0001				
20				Switches / Buttons					
21	H7614	13	HSA7614	Configuration, flowsheets	SAF0001				
22	H7615	13	HS7615	Operation device (field mount.)	TEA0001				
23				Switches / Buttons					
24	H7619	14	HS7619	Operation device (field mount.)	TEA0001				
25				Switches / Buttons					
26	H7620	14	HSA7620	Configuration, flowsheets	SAF0001				
27	H7621	14	HS7621	Operation device (field mount.)	TEA0001				
28				Switches / Buttons					
29	L7604	13	LT7604	Displacer level transmitter	KLCA001				
30	L7605	14	LT7605	Displacer level transmitter	KLCA001				
31	L7654	13	LI7654	Magnetic level indicator	KLBA001				
32	L7655	14	LI7655	Magnetic level indicator	KLBA001				
33	P7615	13	PT7615	Pressure transmitter	KPKA001				
34	P7616	13	PT7616	Pressure transmitter	KPKA001				
35	P7617	13	PT7617	Pressure transmitter	KPKA001				
36	P7619	13	PT7619	Pressure transmitter	KPKA001				
37	P7664	13	PI7664	Pressure gauge	KPCA001				
38	P7665	13	PI7665	Pressure gauge	KPCA001				
39	P7666	13	PI7666	Pressure gauge	KPCA001				
40	P7667	14	PI7667	Pressure gauge	KPCA001				
41	P7668	14	PI7668	Pressure gauge	KPCA001				
42	P7669	14	PI7669	Pressure gauge	KPCA001				
43	P7670	14	PI7670	Pressure gauge	KPCA001				
44	T7614	13	TW7614	Thermowell (flanged type)	KTAB001				
45			TT7614	RTD-thermometer	KTFB001				
46				w. head-mounted transm.					
47	T7615	13	TW7615	Thermowell (flanged type)	KTAB001				
48			TT7615	RTD-thermometer	KTFB001				
49				w. head-mounted transm.					
50	T7616	13	TW7616	Thermowell (flanged type)	KTAB001				
51			TT7616	RTD-thermometer	KTFB001				
52				w. head-mounted transm.					
53	T7617	13	TW7617	Thermowell (flanged type)	KTAB001				
54			TT7617	RTD-thermometer	KTFB001				
55				w. head-mounted transm.					
56	T7618	13	TW7618	Thermowell (flanged type)	KTAB001				
57			TT7618	RTD-thermometer	KTFB001				
58				w. head-mounted transm.					
59	T7619	13	TW7619	Thermowell (flanged type)	KTAB001				
60			TT7619	RTD-thermometer	KTFB001				
61				w. head-mounted transm.					
62	T7620	13	TW7620	Thermowell (flanged type)	KTAB001				
63			TT7620	RTD-thermometer	KTFB001				
64				w. head-mounted transm.					

Instrument index
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Plant
Unit

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Doc.-ID-Code: | CC PB | UA: | Page 1 / 2

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Figure B.37 – PB002 instrument index

#Company

#Customer

#Plant

No.	Device Identifier	Location	Sofware Name	Version	Release	Release number
1	10CRU01GJ101	10UBA0100	DCS System Software	V5.4 + SP5 + HF2	K5.4.5.2_3.1.0.1	K5.4.5.2
2	10CRU01GJ101	10UBA0101	ContinousFunctionChart	V7.0 + SP1 + HF3	K07.00.01.03_01.05.00.01	K7.0.1.3
3	10CRU01GJ101	10UBA0102	License Manager Software	V4.0 + SP5	K04.00.05.00_01.06.00.01	K4.0.5.0
4	10CRU01GJ101	10UBA0103	Failsafe System Software	V6.1	V06.01.00.00_01.16.00.01	V6.1.0.0
5	10CRU01GJ101	10UBA0104	PtP Modbus Master	V3.1 + SP2	R3.1.2.1	V3.1.2.0
6	10CRU01GJ101	10UBA0105	PtP Modbus Slave	V3.1 + SP3	R3.1.3.1	V3.1.3.0
7	10CRU01GJ101	10UBA0106	Failsafe System Library	V1.2 + SP4	K1.2.4.0_1.8.0.4	V1.2.4.0
8	10CRU01GJ101	10UBA0107	NET PC Software	V7.0 + Hotfix 1	Build 3509	7.0.0.1
9						
10						
11						
12						
13						
14						

427/Smith/2010-11-10

System Log Book

& EPD
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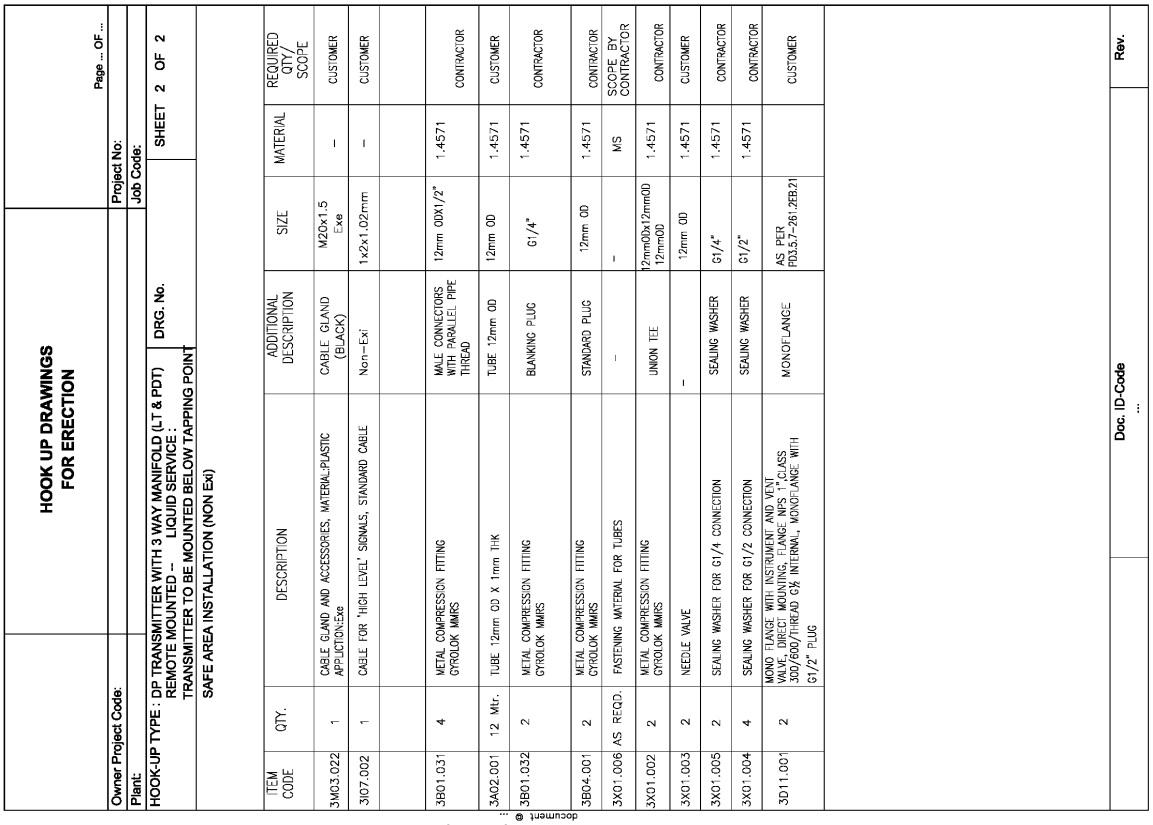
Figure B.38 – PD001 system log book



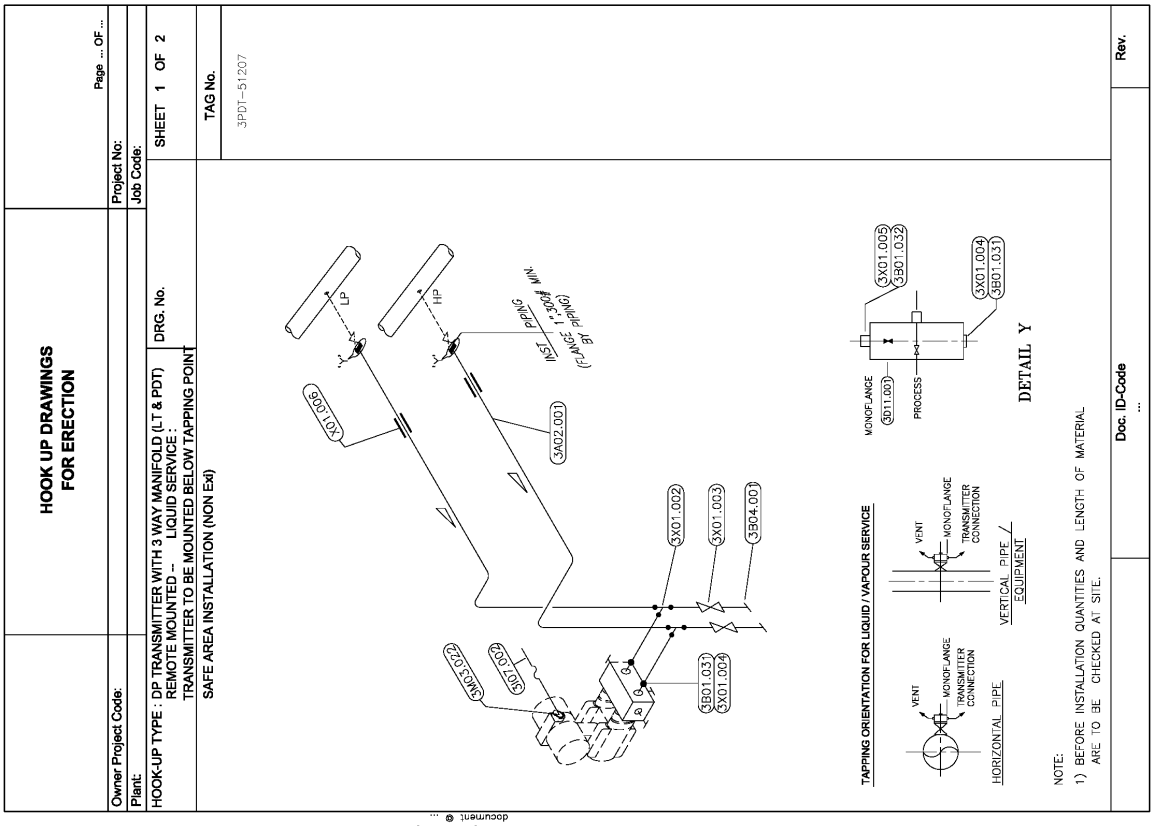


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Figure B.39 – TC001 installation drawing (hook up)

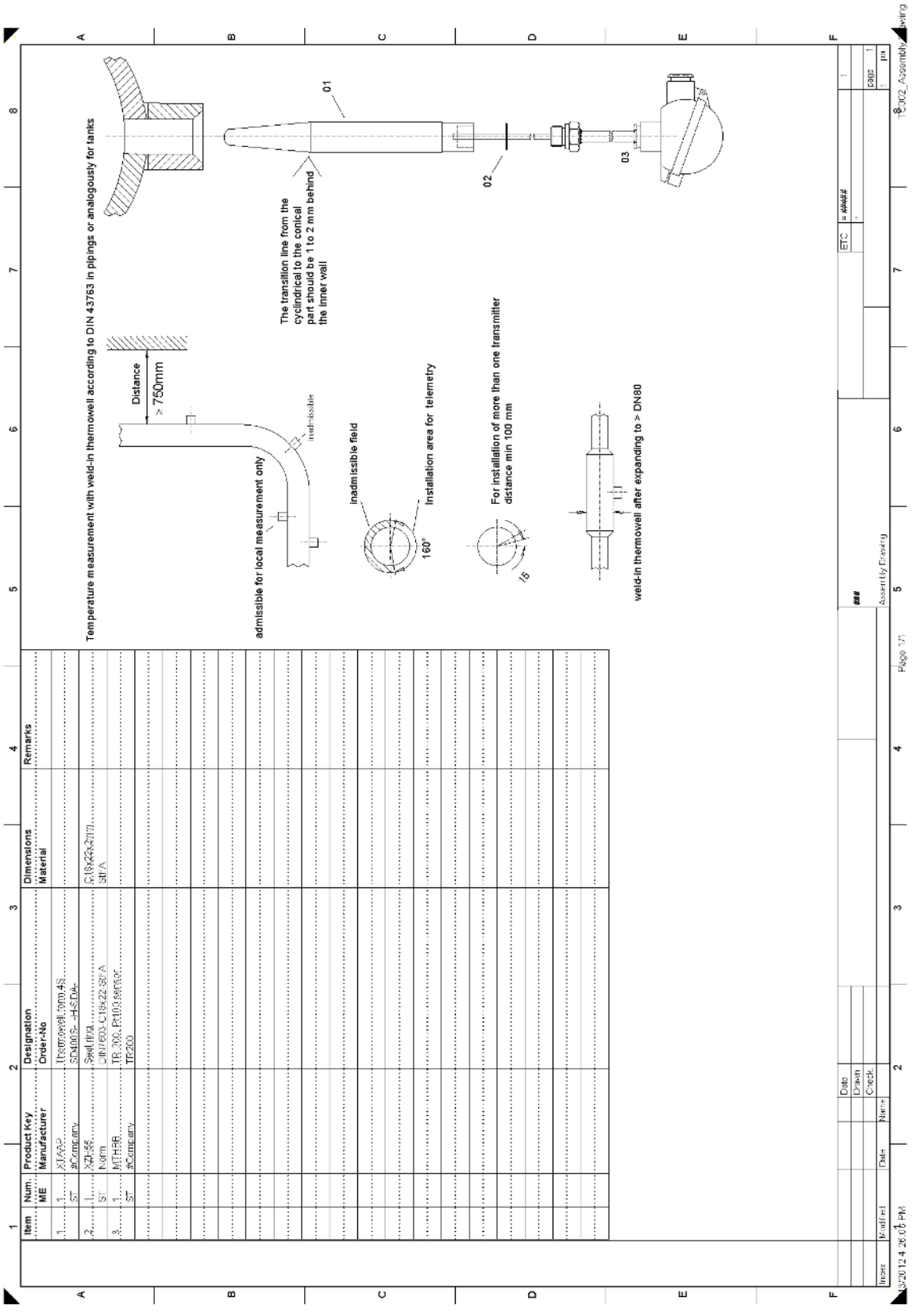

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Figure B.40 – TC002 assembly drawing

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