



SPECIFICATION

Duvha
Power
Station

RESPONSIBLE FUNCTIONAL AREA

ENGINEERING

TITLE:

AKZX PLANT LOCATION CODING
(REFERENCE SPECIFICATION FOR THE
DEVELOPMENT OF AKZX CODES AT
DUVHA)

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COMPILED/ REVIEWED BY:

RECOMMENDED BY
(FUNCTIONAL RESPONSIBILITY):

AUTHORISED BY:

S HLENGWA

Name (Caps)

O NEL

Name (Caps)

N TOERIEN

Name (Caps)

Signature

PRINCIPAL TECH
Design and Spec

Position

Signature

DESIGN AND SPEC
MANAGER

Position

Signature

ENGINEERING MANAGER

Position

Date

Date

Date

THIS DOCUMENT HAS BEEN SEEN AND ACCEPTED BY:

NAME	POSITION
R KING	SENIOR ADVISOR ELECTRICAL
B GALLOWAY	ACTING HEAD C&I ENGINEERING
J MHLONGO	MAINTENANCE SUPPORT SERVICES MANAGER
P MGIDI	MAINTENANCE MANAGER

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REV	DESCRIPTION OF REVISION	DATE
0	ORIGINAL	06/93
1	INTEGRATION OF AKZX CODING AND LABELING DOCUMENTATION	03/96
2	MINOR CHANGES	12/01
3	MINOR CHANGES	05/2005
4	ADDED SWITCHGEAR CODING, LVL4 ELECT SWITCHGEAR AND LEVEL 5 COMPONENT INDICATORS	09/2007
5	COVER PAGE NAME AND DATE CHANGES ONLY	11/2010
6	CHANGES FOR ELECTRONIC EQUIPMENT	11/2012
7	CHANGES FOR ELECTRICAL SWITCHGEAR UNIQUE IDENTIFICATION AND ADDITIONS TO 50 (PAGE 11); Q (PAGE 29) AND ADDED APPENDIX 8.4	07/2013

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1.0 PURPOSE

to provide the necessary information to effectively develop AKZX Plant Location Codes and Descriptions for Duvha Power Station plant and equipment and to indicate how AKZX Codes are represented on Duvha Power Station documentation.

2.0 SCOPE

This Specification describes how AKZX Codes and Descriptions are developed for all applicable Duvha Power Station Plant and how AKZX Codes and Descriptions are represented on documentation.

3.0 REFERENCES

- 3.1 AKZ Power Plant Classification System OPS 0158.
- 3.2 AKZX Plant Location Labeling Specification ETS0004.
(Specification for the Manufacture and Installation of AKZX labels)
- 3.3 Modification Control Procedure (03A) ENP0002.
- 3.4 KKS Power Plant Classification System OPS 0014
- 3.5 Drawing Control Procedure ENP0008.
- 3.6 Engineering Documentation and Drawing Standard 36-943
- 3.7 Plant Related Abbreviations for Inter-System Use GGS 0968.
- 3.8 Duvha Drawing Practice Standard ENS0009

4.0 DEFINITIONS

4.1 Definitions

4.1.1 AKZX System

A method of physical and electronic plant equipment position identification for Configuration Management purposes and to facilitate Engineering Processes (Maintenance, Operating, Change etc.)

The AKZX Database is part of the SAP Maintenance System.

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Physical labels with Codes or Codes and Descriptions are attached to the position of plant equipment and the relevant documentation such as P&ID's reflects the equipment identification.

The Duvha specific AKZX System is based on the AKZ and KKS Plant Classification Systems procedures OPS0158 and OPS0014.

4.1.2 AKZX Code and Description

This Manual; ENS0002 describes in detail how AKZX Codes and Descriptions are developed in terms of the plant breakdown structures and how they are indicated on documentation such as drawings.

The AKZX Code is developed in terms of generic and logical plant breakdown structures i.e. Plant, System, Sub-system and Component.

The AKZX Description is logical and descriptive text reflecting the constitution of the AKZX Code in terms of Plant, System, Sub-system, Function and Component.

4.1.3 AKZX Label

This is the physical label with the AKZX Code or AKZX Code and Abbreviated Description engraved on it. These Labels are attached to, or near to the specific plant equipment to which they refer.

The AKZX Plant Location Labeling Specification ETS0004 describes what these labels should look like (manufacturing) and how they are to be attached (installation) to plant equipment.

4.1.4 SAP Master Data Capturer

A competent person responsible for the maintaining the AKZX Data Base in SAP PM.

4.1.5 Modification

A permanent or temporary change, deletion or addition to any plant system, equipment or structure, including permanent changes to operating set points and technical documentation. This includes the replacement of plant components with equivalent components.

4.1.6 Project Manager

Competent person appointed by the Power Station Manager to ensure that all steps within the modification process are performed according to this procedure.

4.1.7 System Engineer

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A competent engineer responsible for the engineering function of a specific section of plant, e.g. turbine, boiler etc. He/she is responsible, for the development of the AKZX Codes and descriptions together with the Design Engineer and Configuration Coordinator who checks the correctness of the code.

4.2 Abbreviations

SMDC SAP Master Data Capturer
PM Project Manager
P & ID Process and Instrumentation Diagram
SE System Engineer

5.0 RESPONSIBILITIES

5.1 The Power Station Manager has overall responsibility for:

- Ensuring that this Specification is adhered to.

5.2 The Engineering Manager has the responsibility for:

- Ensuring that engineers and configuration staff are appointed and responsible for any additions to the AKZX database.
- Verifying, approving and accepting the correctness of manufactured and installed AKZX Labels on the plant.

5.3 The Maintenance Manager has the responsibility for:

- Replacing labels that were removed from the plant because of Maintenance activities.

5.3 The Outage Manager has the responsibility for:

- Replacing labels that were removed from the plant because of outage activities.

5.3 The Project Manager is responsible for:

- Controlling the AKZX Coding and Labeling Process during the Modification Process.

5.4 The Configuration Coordinator is responsible for:

- The coordination of the AKZX Coding of the plant, all documentation that governs AKZX Coding and Labeling. He is to ensure the correct allocation of AKZX Codes and Descriptions by the system engineer and that all changed coding information is recorded by the SAP Master Data Capturer.

5.5 The System Engineer is responsible for:

- Development of the AKZX codes, assisted by the Configuration Coordinator, and updating of all relevant drawings and other documentation as required by the modification.

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6.0 DEVELOPMENT OF AKZX CODES

AKZX Codes are developed for physical plant position identification (engraving of AKZX Codes and AKZX Descriptions on labels and attached to plant components) as well as for configuration management purposes (Duvha Power Station AKZX database in SAP PM and documentation systems).

6.1 Constitution of AKZX Codes

The AKZX Code reflects the plant breakdown structure e.g. plant, systems, sub-systems and components.

Use the AKZX Code Constitution Diagram (Appendix 8.1) in conjunction with the Dictionary (Appendix 8.3) in order to develop a specific code for a plant system or plant component.

6.2 Constitution of AKZX Code Descriptions

The AKZX Code Description must reflect as far as possible the plant breakdown structure e.g. plant, system, sub-system, function and component (similar to the AKZX Code but in text format). Refer to Appendix 8.2 for examples of AKZX codes and descriptions.

6.3 Representation of AKZX Codes on Documentation

AKZX Codes identify plant components on documentation such as P&ID's. These indications on drawings assist with plant identification for configuration management purposes and also indicate where these physical AKZX Labels can be found on the plant.

The indication on drawings is similar to the AKZX Code constitution but with a few specific differences applicable to instrumentation components (in order to include operating and display details).

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7.0 RECORDS- Not applicable.

8.0 APPENDICES

8.1 AKZX Code Constitution Diagram.

8.2 Examples of AKZX Codes and Descriptions.

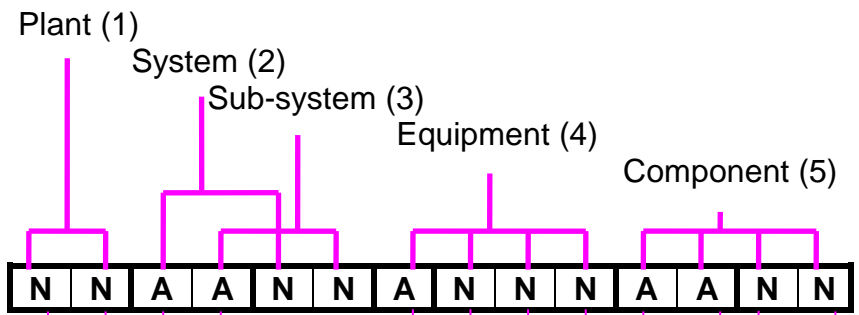
8.3 AKZX Code Constitution Dictionary.

8.4 Siemens SPPA T3000 Specific Coding

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Appendix 8.1 AKZX Code Constitution Diagram.

Breakdown Level



- Plant Indicator** (Numeric)
(Page 11)
- System Indicator** (Alphabetic)
(Page 12)
- Sub-system Indicator** (Alphabetic)
(Pages 13 to 37)
- System Indicator** (Numeric, consecutive)
- Sub-system Indicator** (Numeric, consecutive)
- Equipment Indicator** (Alphabetic)
(Pages 38 to 41)
- Equipment Indicator** (Numeric, consecutive)
(Page 42 to 43 for details)
- Component Indicator** (Alphabetic)
(Page 44)
- Component Unit Indicator** (Alphabetic)
(Pages 45 to 49)
- Component Indicator** (Numeric, consecutive)

Legend: **N-** Numeric Number
A- Alphabetic Character

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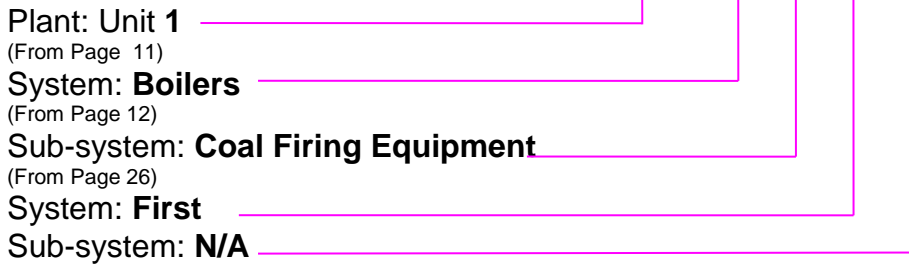
Appendix 8.2 Examples of AKZX Codes and Descriptions.

Example 8.2.1.

AKZX Description: Unit 1 Mill A

AKZX Code:

0	1	N	M	1	0									
---	---	---	---	---	---	--	--	--	--	--	--	--	--	--

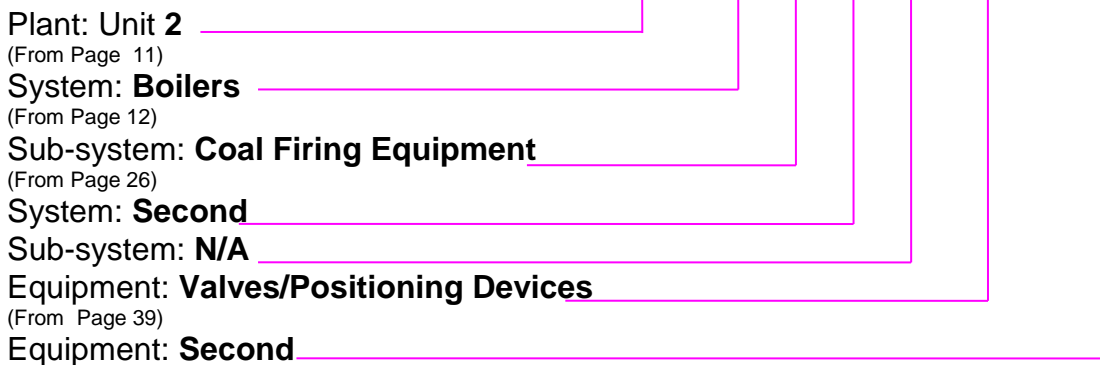


Example 8.2.2.

AKZX Description: Unit 2 Mill B Tempering Air Damper

AKZX Code:

0	2	N	M	2	0	S	0	0	2					
---	---	---	---	---	---	---	---	---	---	--	--	--	--	--



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Appendix 8.2 Examples of AKZX Codes and Descriptions (Continued).

Example 8.2.3.

AKZX Description: Unit 2 Mill C Tempering Air Damper Actuator

AKZX Code:

0	2	N	M	3	0	S	0	0	2	M	U	0	1
---	---	---	---	---	---	---	---	---	---	---	---	---	---

Plant: Unit 2

(From Page 11)

System: **Boilers**

(From Page 12)

Sub-system: **Coal Firing Equipment**

(From Page 26)

System: **Third**

Sub-system: **N/A**

Equipment: **Valves/Positioning Devices**

(From Page 39)

Equipment: **Second**

Component: **Mechanical Component**

(From Page 44)

Component: **Transmission Device**

(From Page 46)

Component: **First**

Example 8.2.4.

AKZX Description: Unit 5 380V Unit Diesel Generator Board CCT 061 AC Plant Room (For Electrical Voltage Boards)

AKZX Code:

0	5	C	G	0	6	1	B	0	0	1	K	0	9
---	---	---	---	---	---	---	---	---	---	---	---	---	---

Plant: Unit 5

(From Page 11)

System: **Unit LV Distribution System**

(From Page 12)

Sub-system: **380V Unit Diesel Generator Board**

(From Page 15)

Indicator: **Circuit 061**

Equipment: **Switchgear**

(From Page 39)

Equipment **Unique Identification: Sequential number: First**

Component Indicator (From page 44)

Component Sequential number

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Appendix 8.3 AKZX Code Constitution Dictionary.

BREAKDOWN LEVEL 1: PLANT INDICATOR (Numeric)		
INDICATOR	DESCRIPTION	REV
00	Station/Common Plant	1
01	Unit 1	0
02	Unit 2	0
03	Unit 3	0
04	Unit 4	0
05	Unit 5	0
06	Unit 6	0
10	South of Boiler and Turbine House Wall (Projected East- and Westward)	0
20	North of Boiler and Turbine House Wall (Projected East- and Westward)	0
30	East of Boiler House	0
40	West of Turbine House	0
50	Station: For items which are only partly divisible under 10 - 40	0
51	Water treatment plant ancillary equipment	0
52	Common to Units 1&2	7
54	Common to Units 3&4	7
56	Common to Units 5&6	7
60	LV & MV distribution system for coal plant	0
61	Ash plant equipment	0

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BREAKDOWN LEVEL 2: SYSTEM INDICATOR (Alphabetic)		
INDICATOR	DESCRIPTION	REV
A	HV distribution systems & system transformers	0
B	Unit MV distribution system (3.3/11 kV)	6
C	Unit LV distribution system (220/380 V)	6
D	DC power supplies & distribution system	0
E	Auxiliary supplies	0
F	Station 3.3 kV power supplies	6
G	380 V Station	6
H	Open loop control, alarm and protection system boards and cubicles	0
I	Structures	0
J	Closed loop control and measuring system boards and cubicles	0
K	Junction boxes	0
L	Unit control room desks & panels/Local control operator & engineer desks	0
M	Communications equipment & electrical metering	0
N	Boilers	0
O	Overheads	0
P	Fuel handling	0
Q	Electronic Control Equipment	6
R	Water/steam system	0
S	Steam turbine & generator	0
T	Operating maintenance general	0
U	Conventional auxiliaries	0
V	Cooling water system	0
W	Ash plant	0
Y	Civil works	0
Z	Civil works	0

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BREAKDOWN LEVEL 3: SUB-SYSTEM INDICATOR (Alphabetic)		
INDICATOR	DESCRIPTION	REV
A	HV DISTRIBUTION SYSTEMS & SYSTEM TRANSFORMER	
AA	275/800 kV Busbar	6
AB	Line & earth links	0
AC	Current voltage transformers	0
AD	Bus section breaker	0
AE	Feeder breaker	0
AF	Gen 275/400 Kv breaker	6
AG	Busbar links	0
AH	Current transformers	0
AJ	275/800 kV line traps	0
AK	Lightning/surge arresters	0
AL	Busbar earth links	0
AM	Metering	0
AN	Generator reverse power	0
AP	Generator breaker & busbars	0
AQ	Line links	0
AR	Generator busbar earthing resistor	0
AS	Bus coupler breaker	1
AT	Generator transformer and HV breaker (400 kV)	6
AU	Air breaker compressors	0
AV	Feeders	0
AW	Earthing resistors	1
AX	Spare	0
AY	Unit isolators & earthing switch	
AZ	General HV yard	

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BREAKDOWN LEVEL 3: SUB-SYSTEM INDICATOR (Alphabetic)		
INDICATOR	DESCRIPTION	REV
B	UNIT MV DISTRIBUTION SYSTEM (3.3/11 kV)	
BA	11 kV Unit Board A	6
BB	11 kV Unit Board B	6
BC	Station & Unit Service Transformers	0
BD	3.3 kV Service Board A	6
BE	3.3 kV Service Board B	6
BF	11 kV Unit Board C	6
BG	3.3 kV Service Board C	6
BH	3.3 kV Service Board D	6
BJ	3.3 kV Unit Diesel Generator Boards	6
BK	11 kV Loop Supply Maintenance Isolating Board	6
BL	Unit Diesel Generator & related equipment	0
BM	Station Diesel Generator & related equipment	0
BN	11 kV Maintenance Isolating Board A	6
BP	11 kV Maintenance Isolating Board B	6
BQ	Coal Stockyard sub-station	1
BR	Earthing resistors	0
BS	Spare	0
BT	11/3.3 kV DYN Transformers	6
BU	Spare	1
BV	Spare	0
BW	Spare	0
BX	Spare	0
BY	Spare	1
BZ	Spare	0

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BREAKDOWN LEVEL 3: SUB-SYSTEM INDICATOR (Alphabetic)		
INDICATOR	DESCRIPTION	REV
C	UNIT LV DISTRIBUTION SYSTEM (220/380V)	6
CA	380 V Unit Board A	6
CB	380 V Unit Board B	6
CC	380 V Unit Board C	6
CD	380 V Unit Board D	6
CE	380 V Unit Lighting Board	6
CF	380 V Unit Lighting Board (essential-supply)	6
CG	380 V Unit Diesel Generator Board	6
CH	380 V Fuel Oil Heater Board Units 4, 5, 6	6
CJ	380 V CW Unit Board A	6
CK	380 V CW Unit Board B	6
CL	380 V Precipitator/ Fabric Filter Plant board A	6
CM	380 V Precipitator/ Fabric Filter Plant board B	6
CN	380 V Dust Handling Plant board A	6
CP	380 V Dust Handling Plant board B	6
CQ	Spare	6
CR	400V Actuator Board	6
CS	400 V Unit Outage Board	6
CT	220 V Power Reticulation (Sockets)	6
CU	Spare	6
CV	400 V Air Conditioning board	6
CW	Spare	1
CX	Miscellaneous 380 V Unit Lighting sub-boards	6
CY	Spare	1
CZ	Unit Uninterruptible Power Supply	1

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BREAKDOWN LEVEL 3: SUB-SYSTEM INDICATOR (Alphabetic)		
INDICATOR	DESCRIPTION	REV
D	DC POWER SUPPLIES & DISTRIBUTION SYSTEM	
DA	220 V DC Station Board 1	6
DB	220 V DC Station Board 2	6
DC	24/48 V DC Station Board	6
DD	220 V DC Station Board 3	6
DE	220 V DC Station Battery/ Charger 1	6
DF	220 V DC Station Battery/charger 2	6
DG	220 V DC sub station Battery/ Charger tripping units	6
DH	Miscellaneous DC Distribution Board & Station Control DC supplies	0
DJ	220 V DC Unit Board A	6
DK	220 V DC Unit Board B	6
DL	220 V DC Unit Board C	6
DM	24/48 V DC Unit Board A	6
DN	24/48 V DC Unit Board B	6
DP	220 V Unit Battery/Chargers	6
DQ	24 V Unit Battery/Charger A1+	6
DR	24 V Unit Battery/Charger A2-	6
DS	24 V Unit Battery/Charger B1+	6
DT	24 V Unit Battery/Charger B2-	6
DU	Turbine Solenoid Valve Power Distribution Cubicles	1
DV	Boiler Solenoid Valve Power Distribution Cubicles	0
DW	Spare	0
DX	Miscellaneous 220 V DC Lighting sub-boards (Units & Station)	0
DY	Telephone Battery	1
DZ	Radio Battery	0

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BREAKDOWN LEVEL 3: SUB-SYSTEM INDICATOR (Alphabetic)		
INDICATOR	DESCRIPTION	REV
E	AUXILIARY SUPPLIES	6
EA	Miscellaneous 11 kV Boards	6
EB	Miscellaneous 11 kV Boards	6
EC	Miscellaneous 11 kV Boards	6
ED	Miscellaneous 11 kV Boards	6
EE	Miscellaneous 11 kV Boards	6
EF	Miscellaneous 11 kV Boards	6
EG	Miscellaneous 11 kV Boards	6
EH	Miscellaneous 11 kV Boards	6
EJ	Miscellaneous 11 kV Boards	6
EK	88 kV-132 kV Breaker	6
EL	88 kV-132 kV Line Isolator	6
EM	Overhead Line Supplies	6
EN	Spare	0
EP	Distribution Boxes (Hoppers/Heaters/Precipitators)	0
ER	Station Earthing Resistor	0
ES	Mini-sub	0
ET	Station Transformers, Neutral Earthing Compensator, Earthing	0
EU	24-48 V Power Supply Unit and Battery Outside Plant Control Station Sub-Station Supply	6
EV	11 kV Station Dam Pump House	6
EW	Spare	0
EX	Spare	0
EY	380 V Emergency Power Generating Plant	6
EZ	Uninterruptible Power Supply General	0

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BREAKDOWN LEVEL 3: SUB-SYSTEM INDICATOR (Alphabetic)		
INDICATOR	DESCRIPTION	REV
F	STATION 3.3 kV POWER SUPPLIES	6
FA	Miscellaneous 3.3 kV Boards	6
FB	Miscellaneous 3.3 kV Boards	6
FC	Miscellaneous 3.3 kV Boards	6
FD	Miscellaneous 3.3 kV Boards	6
FE	Miscellaneous 3.3 kV Boards	6
FF	Miscellaneous 3.3 kV Boards	6
FG	Miscellaneous 3.3 kV Boards	6
FH	Miscellaneous 3.3 kV Boards	6
FJ	Miscellaneous 3.3 kV Boards	6
FK	Miscellaneous 3 3 kV Boards	6
FM	Spare	0
FN	Spare	0
FP	Spare	0
FQ	Spare	0
FR	Spare	0
FS	Spare	0
FT	Spare	0
FU	Spare	0
FV	Spare	1
FW	Spare	0
FX	Spare	0
FY	Spare	0
FZ	Spare	0

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BREAKDOWN LEVEL 3: SUB-SYSTEM INDICATOR (Alphabetic)		
INDICATOR	DESCRIPTION	REV
G	380 V STATION	6
GA	Miscellaneous 380 V Boards	6
GB	Miscellaneous 380 V Boards	6
GC	Miscellaneous 380 V Boards	6
GD	Miscellaneous 380 V Boards	6
GE	Miscellaneous 380 V Boards	6
GF	Miscellaneous 380 V Boards	6
GG	Miscellaneous 380 V Boards	6
GH	Miscellaneous 380 V Boards	6
GJ	Miscellaneous 380 V Boards	6
GK	Miscellaneous 380 V Boards	6
GL	Miscellaneous 380 V Boards	6
GM	Miscellaneous 380 V Boards	6
GN	Miscellaneous 380 V Boards	6
GP	Miscellaneous 380 V Boards	6
GQ	Miscellaneous 380 V Boards	6
GR	Miscellaneous 380 V Boards	6
GS	Miscellaneous 380 V Boards	0
GT	380/380 dyn. 11 Transformer	6
GU	Miscellaneous 380 V Boards	6
GV	Miscellaneous 380 V Boards	6
GW	Spare	0
GX	380 V Miscellaneous Station Lighting Sub-boards	6
GY	Miscellaneous 380 V Boards	6
GZ	Miscellaneous 380 V Boards	6

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BREAKDOWN LEVEL 3: SUB-SYSTEM INDICATOR (Alphabetic)		
INDICATOR	DESCRIPTION	REV
H	OPEN LOOP CONTROL, ALARM & PROTECTION SYSTEM BOARDS & CUBICLES	6
HA	Interlock logic	0
HB	Sequence Control	0
HC	Contact Conversion	0
HD	Drive Control	0
HE	Alarm System, Stops Computer	0
HF	Local Alarm Panels	0
HG	Generator Relay Panels/HV Relay Panel	0
HH	Hydrastep	0
HI	Spare	0
HJ	Automatic Voltage Regulator & Generator Excitation	0
HK	Generator Breaker	0
HL	Interface (Computer & Burner)	0
HM	Metering & Measurement	0
HN	Unit Station Bus-Zone Protection/Service Transformer Differential Panels	0
HP	Turbine & Boiler Feedpump Turbine & Feedpump Protection	0
HQ	Coal Plant PLC Cubicles	0
HR	Fire Protection Alarm Cubicle	0
HS	Sootblower Control	0
HT	Fuel Oil Heating Control Panels	0
HU	Computer, Binary Inputs & Analogue Inputs & Station Alarm Input/Output Printers	0
HV	Boiler Flame Monitor/Peabody Oil Burner Common Cubicle	0
HW	Water Plant	0
HX	Boiler HP Auxiliary (Bypass Safety)	0
HY	Ash Plant (Including Precipitator Programmable Logic Control Cubicles)	0
HZ	Boiler Fuel Auxiliary, Local Burner Control	0

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BREAKDOWN LEVEL 3: SUB-SYSTEM INDICATOR (Alphabetic)		
INDICATOR	DESCRIPTION	REV
I	STRUCTURES	
IA	Water Plant Structures	0
IB	Fire Station/Medical Centre	0
IC	Chimneys	0
ID	Fuel Plant Structures	0
IE	Turbine House Structures	0
IF	Boiler House Structures	0
IG	Auxiliary Structures	0
IH	HV Yard Structures	0
II	Workshop Structures	0
IJ	Lighting Masts	0
IK	LP Services Structure	0
IL	Security Structures	0
IM	Stores	0
IN	Outside Plant Control Room Structure	1
IO	Laboratory Structures	0
IP	Recreation Centres	0
IQ	Churches	0
IR	Training Centre	0
IS	Administrative Structure	0
IT	Schools	0
IU	Consulting Rooms	0
IV	Canteens	0
IW	Accommodation: Single	1
IX	Accommodation: Married (On Site)	1
IY	Accommodation: Witbank	1
IZ	Change Rooms & toilets (If Separate)	0

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BREAKDOWN LEVEL 3: SUB-SYSTEM INDICATOR (Alphabetic)		
INDICATOR	DESCRIPTION	REV
J	CLOSED LOOP CONTROL AND MEASURING SYSTEM BOARDS & CUBICLES	
JA	Auxiliary Analog Control	0
JB	Boiler Control	0
JC	Summator (Analog)	0
JD	220 V AC Power Distribution	6
JE	Auxiliary Analog Control Contactor Cubicles	0
JF	Boiler Analog Control Contactor Cubicles	0
JG	Generator	0
JH	HP Bypass Control Cubicle	0
JJ	Programmable Logic Control (Interlocking)	0
JK	Spare	0
JL	Limit Valve Monitor	0
JM	Measurements/Transducer Cubicles	0
JN	Spare	0
JP	Turbine and Boiler Feedpump Turbine Protection	0
JQ	Spare	0
JR	Spare	0
JS	Spare	0
JT	Electro Hydraulic Governor & Turbine Supervisory Equipment	0
JU	Turbine and Boiler Feedpump Local Cubicles	0
JV	Spare	0
JW	Water Plant	0
JX	Spare	0
JY	Computer Standard Peripherals	0
JZ	Spare	0

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BREAKDOWN LEVEL 3: SUB-SYSTEM INDICATOR (Alphabetic)		
INDICATOR	DESCRIPTION	REV
K	JUNCTION BOXES	
KA	Boiler Auxiliaries	0
KB	Boiler Plant	0
KC	Feed Heating/Condensate/Feedwater	0
KD	Welding Plugs/Socket Outlets	0
KE	Electrical - Unit Supply	0
KF	Fire Detection and Alarm System	0
KG	Generator and Transformer	0
KH	HV Yard	0
KI	Ash Stacker	0
KJ	Outside Plant Control System	0
KK	Coal Handling Plant	0
KL	Lighting	0
KM	Communications	0
KN	Water Treatment Plant (Local Control Stations)	0
KO	Cranes	0
KP	Water Treatment Plant (Local Solenoid Operated Valve Panels)	0
KQ	Water Treatment Plant (Local Control and Instrumentation Metering Panels)	0
KR	Dust Handling Plant LP Services Junction Boxes	0
KS	Sootblowers	0
KT	Main Turbine	0
KU	Boiler Feedpump Turbine	0
KV	Cooling Water Plant	0
KW	Water Plant	0
KX	Station Electrical	0
KY	Ash Plant/Dust Handling Plant	0
KZ	Water Supply	0

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BREAKDOWN LEVEL 3: SUB-SYSTEM INDICATOR (Alphabetic)		
INDICATOR	DESCRIPTION	REV
L	Unit control room desks & panels/Local control operator & engineer desks	
LA	Desk	0
LB	Panel Excluding Grids	0
LC	Panel Grid 1	0
LD	Panel Grid 2	0
LE	Panel Grid 3	0
LF	Local Control Station (Control Panels For Fire Pumps)	0
LG	Disc Storage Unit & Disc Drive All Types	1
LH	Station Mimic Panel (Live & Dead)	0
LJ	Electric Operators Desk	0
LK	Station Recorder Panels	0
LL	Manual Synchronization & Voltage Selector Panels	0
LM	Printers	0
LN	Station Plant Control Panel	0
LP	Station Plant Mimic	0
LQ	Key Cabinets (Station / Units / Outside Plants)	0
LR	Outside Plant Control System, Storage Cabinets Temperature & Humidity Record	0
LS	Outside Plant Control System (Auxiliary Plant Panels)	0
LT	Local Control Stations Coal Outside Plant Control Station	0
LU	Local Control Station Ash Plant Unit Computer Uninterruptible Power Supply & Coarse Ash Junction Boxes & Local Control Station	0
LV	Outside Plant Control Station Control Desk Fuel Oil Local Control Stations Low Pressure Services/Cooling Plant	0
LW	Local Control Station Fuel Oil Plant Unit & Stations	0
LX	Local Control Station Dust Handling Plant	0
LY	Local Control Station/Mimic Panels/Control Desks (Ash Stacker)	6
LZ	Unit Control Room Audible Alarm	0

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BREAKDOWN LEVEL 3: SUB-SYSTEM INDICATOR (Alphabetic)		
INDICATOR	DESCRIPTION	REV
M	COMMUNICATIONS EQUIPMENT & ELECTRICAL METERING	
MA	MV/HV Alarm System	0
MB	Communications Equipment Cabinet	0
MC	Access Control System (Door Monitor Turnstiles Etc.)	6
MD	Data Equipment (Commercial Applications)	0
ME	Electrical Metering (Communications)	0
MF	Spare	0
MG	Spare	0
MH	Telephone Hooters Fixed	0
MJ	Emergency Station Alarms	0
MK	Spare	0
ML	Intermediate Distribution Frame Supply	0
MM	Scald Equipment Cabinet Radio Transformer Cubicle	6
MN	Scald Intermediate Distribution Frame	0
MP	Power Supplies	0
MQ	Wire Communications, Telemetry Cabinets	0
MR	Radio Communications	0
MS	MV/HV Supervisory	0
MT	Telephone Distribution Frame	0
MU	Station Uninterruptible Power Supply	0
MV	220 V Distribution Boards 220 V AC Metering Distribution Board	6
MW	Station Distribution Frame	0
MX	Main Distribution Frame	0
MY	Unit Distribution Frame	0
MZ	Intermediate Distribution Frame	

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BREAKDOWN LEVEL 3: SUB-SYSTEM INDICATOR (Alphabetic)		
INDICATOR	DESCRIPTION	REV
N	BOILERS	
NA	High Pressure System	0
NB	Circulating System / Auxiliary Start-Up Lines	0
NC	Drains and Vents	0
ND	Spare	0
NE	Reheat	0
NF	Second Re-Heat	0
NG	Air Supply	0
NH	Flue Gas, Air Heaters	0
NJ	Tube Leak Detection	0
NK	Lighting-Up Equipment	0
NL	Oil Firing Equipment	0
NM	Coal Firing Equipment (Mill Air Vapour, Dust Extraction)	6
NN	Gas Firing Equipment	0
NP	Coarse Ash Return (Under Burners)	0
NQ	Flue Gas Cleaning/Fabric Filter Plant	0
NR	Flue Gas Extraction (Including Opacity Monitoring)	1
NS	Secondary Air System	0
NT	Fly Ash Return (Electrostatic Precipitators)	0
NU	Ash and Slag Removal & Transport	0
NV	Heating Surface Cleaning	0
NW	Spray Water	0
NX	PFA Pneumatic Handling	0
NY	Outage Hp Pipework	1
NZ	Auxiliary Boiler (Donkey Boiler)	0

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BREAKDOWN LEVEL 3: SUB-SYSTEM INDICATOR (Alphabetic)		
INDICATOR	DESCRIPTION	REV
O	OVERHEADS	
OA	Spare	0
OB	Spare	0
OC	Spare	0
OD	Spare	0
OE	Spare	0
OF	Spare	0
OG	Spare	0
OH	Software (Process Computer)	1
OI	Spare	0
OJ	Spare	0
OK	Spare	0
OL	Spare	0
OM	Spare	0
OM	Spare	0
ON	Spare	0
OP	Spare	0
OQ	Spare	0
OR	Spare	0
OS	Spare	0
OT	Spare	0
OU	Spare	0
OV	Spare	0
OW	Spare	0
OX	Spare	0
OY	Spare	0
OZ	Spare	0

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BREAKDOWN LEVEL 3: SUB-SYSTEM INDICATOR (Alphabetic)		
INDICATOR	DESCRIPTION	REV
P	FUEL HANDLING	
PA	Coal Unloading & Storage	0
PB	Coal Preparation & Transport	0
PC	Coal Conveyor Belts (Terrace Coal Conveyor Plant)	6
PD	Fuel Oil Storage	0
PE	Fuel Oil Supply / Metering	0
PF	Trace Heating Panel-Fuel Plant Up to Unit Boiler Including	0
PG	Gas (Gas/Trace Heating Panel On Units)	0
PH	Coal Hoppers	0
PI	Coal Transfer House	0
PJ	Dust Suppression	0
PK	Gates (On Coal Chutes)	0
PL	Winches & Hoists	0
PM	Coal and Oil Metering/Sampling	0
PN	Coal Crushers	0
PP	Coal Plant Magnet Separation Equipment	0
PQ	Coal Stockyard Sub-Station	0
PR	Reversible Belt Conveyor	0
PS	Coal Silos	0
PT	Coal Belt Tripper	0
PU	Chutes	0
PV	Coal feeder	0
PW	Wash/Spray/Sluice Water	0
PX	Coal Chain Conveyor	0
PY	Coal Bucket Conveyor	0
PZ	Coal Stacker Reclaimer	0

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BREAKDOWN LEVEL 3: SUB-SYSTEM INDICATOR (Alphabetic)		
INDICATOR	DESCRIPTION	REV
Q	ELECTRONICS	
QA	Spare	7
QB	Business Network Interfaces	6
QC	Process Computer Networks	6
QD	Demilitarized Networks	6
QE	Condition Monitoring Systems	6
QF	SCADA and Standalone PLC Systems	6
QG	Spare	7
QH	Spare	7
QJ	Spare	7
QK	Spare	7
QL	Spare	7
QM	Substation Automation System	6
QN	Spare	7
QP	Spare	7
QQ	Spare	7
QR	Spare	7
QS	Spare	7
QT	Spare	7
QU	Spare	7
QV	Spare	7
QW	Spare	7
QX	Spare	7
QY	Spare	7
QZ	Spare	7

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BREAKDOWN LEVEL 3: SUB-SYSTEM INDICATOR (Alphabetic)		
INDICATOR	DESCRIPTION	REV
R	WATER/STEAM SYSTEM	
RA	Initial Steam Line, HP Bypass	0
RB	Hot Reheat Line, LP Bypass	0
RC	Cold Reheat Line	0
RD	Spare For Second Reheat	0
RE	Spare For Second Reheat	0
RF	HP Extractions	0
RG	Control Fluid System (HP, LP, B/P & R/H SFTY V/V)	6
RH	LP Extractions	0
RJ	Spare	0
RK	Drain From Start-Up Flush Tank	0
RL	Feed Water Transfer (HP)	6
RM	Condensate Transfer (HP)	0
RN	Aux Condensate Transfer/Drain (LP Feed Water)	6
RO	Shared Equipment For Turbine and Generator	0
RP	Aux Condensate Transfer/Drain (HP Feed Water)	6
RQ	Auxiliary Steam Equipment	0
RR	Spare	0
RS	Spare	0
RT	Piping Drains (Not Including In Other Groups)	0
RU	Drain & Return Systems	0
RV	Spare	0
RW	Bled Steam Turbine Condensate Transfer	0
RX	Spare	0
RY	Spare	0
RZ	Metering	0

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BREAKDOWN LEVEL 3: SUB-SYSTEM INDICATOR (Alphabetic)		
INDICATOR	DESCRIPTION	REV
S	STEAM TURBINE & GENERATOR	
SA	Turbine Casing	0
SB	Turbine Bearing	0
SC	Oil System	0
SD	Condensor System & Taprogge	0
SE	Governing and Protection Equipment	0
SF	Bypass	0
SG	Gland Steam System	0
SH	Drain System	0
SJ	Control Fluid System	0
SK	Compressed Air System	0
SL	Push Button On Turbine/Generator End	0
SM	Gearing	0
SN	Turbine	0
SO	Shared Equipment For Turbine and Generator	0
SP	Generator (Stator, Rotor/Cooling System)	0
SQ	Generator Bearings	0
SR	Exciter (Including Cooling System)	0
SS	Water Supply (Direct Water Cooling Including Secondary Cooling Circuit)	0
ST	Hydrogen and CO ₂ Supply	1
SU	Sealing Oil System	0
	Condenser Cleaning Equipment	0
SV	Spare	1
SW	LP Turbine System	1
SX	IP Turbine System	0
SY	LP Turbine System	0
SZ	Spare	0

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BREAKDOWN LEVEL 3: SUB-SYSTEM INDICATOR (Alphabetic)		
INDICATOR	DESCRIPTION	REV
T	OPERATING MAINTENANCE GENERAL	
TA	Outage	0
TB	Training	0
TC	General	0
TD	Unit Start Up	0

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BREAKDOWN LEVEL 3: SUB-SYSTEM INDICATOR (Alphabetic)		
INDICATOR	DESCRIPTION	REV
U	CONVENTIONAL AUXILIARIES	
UA	Filtration Plant	0
UB	Boiler Feed Water Make-Up Demineralisation Plant	0
UC	Condensate Polishing/Generation Plant	0
UD	Resin Transfer System	0
UE	Chemical Storage and Dilution Equipment	0
UF	Condensate Chemical Conditioning & Unit Sampling System	0
UG	Demineralisation Reticulation	0
UH	Effluent Recover and Re-Use, Sludge Disposal	0
UJ	Cranes/Hoists/Lifts	0
UK	Potable Reticulation	0
UL	Turbine Lubrication Oil Storage & Regeneration	0
UM	Diesel Fuel Supply For Standby Equipment	0
UN	Effluent Concentration Plant	0
UP	Evaporator Plant	0
UQ	Sewerage Plant General	0
UR	General Service Water System	0
US	Control and Service Air System/Air Conditioning & Ventilation	0
UT	Slag & Ash Transport	0
UU	Extinguishing Systems	2
UV	Vacuum Cleaning System	0
UW	Used Oil Collection and Storage	0
UX	Fire Detection and Alarm System	0
UY	Fire Water & Protection System	0
UZ	Sampling Systems	0

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BREAKDOWN LEVEL 3: SUB-SYSTEM INDICATOR (Alphabetic)		
INDICATOR	DESCRIPTION	REV
V	COOLING WATER SYSTEM	
VA	Raw Water Supply	0
VB	Process & Potable Water Treatment & Cooling Water Clarification Plant	0
VC	Station Cooling Water System, Excl. Concentrated Circulation Water (CW Pumps)	1
VD	Unit Auxiliary Cooling Water System, Boiler/Turbine (Inhibited Demineralised Water)	0
VE	Ash Water (to WTP)	0
VF	Secondary Cooling Water System (Turbine)	0
VG	Secondary Cooling Water (Also Turbine)	0
VH	Flue Gas Supply to Water Treatment Plant For Cooling Water Recarbonation	0
VJ	Unit Sampling Cooling	0
VK	Spare	0
VL	Hoists/Cranes In Cooling Water Pumphouse	0
VM	Metering	0
VN	Spare	0
VP	Spare	0
VQ	Spare	0
VR	Dirty Water Dam	0
VS	Ash Water Return (including Ash Dams)	2
VT	Cooling towers	0
VU	Spare	0
VV	Spare	0
VW	Spare	0
VX	Spare	0
VY	Spare	0
VZ	Cooling Water Plant General	0

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BREAKDOWN LEVEL 3: SUB-SYSTEM INDICATOR (Alphabetic)		
INDICATOR	DESCRIPTION	REV
W	ASH PLANT	
WA	Conveyor-In-Pit Ash Dump, Ash Unloading & Storage	0
WB	Ash Preparation & Transport	0
WC	Conveying Systems - Mixed Ash, Belt, Air, Water	2
WD	Drag-Line Scraper - Coarse Ash	0
WE	Conveyors - Coarse Ash	0
WF	Conveyors - Fly Ash	1
WG	Pneumatic Ash Transport (DHP)	0
WH	Ash Hopper	0
WI	Ash Transfer House	0
WJ	Dust Extraction & Filtering	0
WK	Gates On Ash Chutes	0
WL	Ash Plant Dams	0
WM	Ash Metering	0
WN	Ash Crushers (Clinker)	0
WO	Ash Scraper Link Conveyor	0
WP	Fly Ash Air Slide	0
WQ	Fly Ash Aeration Devices	0
WR	Compressed Air	0
WS	Ash Silos/Bunkers	2
WT	Ash Belt Tripper	0
WU	Ash Conditioner	0
WV	Ash Feeder	0
WW	Wash/Spray/Sluice Water/Ash Water Supply	0
WX	Fly Ash Mechanical Conveyor	0
WY	Fly Ash Bucket Conveyor	0
WZ	Ash Stacker	0

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BREAKDOWN LEVEL 3: SUB-SYSTEM INDICATOR (Alphabetic)		
INDICATOR	DESCRIPTION	REV
Y	CIVIL WORKS / BUILDINGS	
YA	Transformer Yards	0
YB	Switchgear Buildings / Substations	0
YC	Radio Repeater Structures	0
YD	Dust Suppression Structures	0
YE	Ash Plant Structures & Civil Works	0
YF	Coal Plant Structures & Civil Works	0
YG	Pump Stations	0
YH	Admin	1
YJ	H ₂ Plant Structures	0
YK	Smoke Stacks	0
YL	Non Station Buildings	0
YM	Diesel Generator Structure	6
YN	LP Distribution Pump House, LP Gas	0
YP	Auxiliary Bay	1
YQ	Sewage Plant Structures	0
YR	WTP & Laboratory	0
YS	Fire & Foam Station, Fire Control Pump House	0
YT	Turbine	0
YU	Plant Buildings General	0
YV	Training	0
YW	Spare	0
YX	Spare	0
YY	Cable Tunnels (Including Access Stiles, Trunking, Racks and Trenches)	1
YZ	Dog kennels	0

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BREAKDOWN LEVEL 3: SUB-SYSTEM INDICATOR (Alphabetic)		
INDICATOR	DESCRIPTION	REV
Z	CIVIL WORKS / BUILDINGS	
ZA	Production Equipment (General)	0
ZB	Recreation Buildings & Facilities	0
ZC	Main Air Conditioning Plant	0
ZD	Dams & Reservoirs	0
ZE	Beacons, Boreholes & Inspection Shafts	0
ZF	Mobile Equipment	0
ZG	Canteens (Bon Appetite)	0
ZH	township Electrical System	0
ZI	Office Furniture and Equipment	0
ZJ	Spare	1
ZK	Spare	0
ZL	Spare	0
ZM	Emergency Services Buildings	1
ZO	Gardens, Grounds & Nature Reserve	0
ZP	Drains (Sewage, Storm, Trenches and V-ditches)	0
ZR	Roads and Airstrips	0
ZS	Domestic Furniture and Equipment	0
ZT	township Water Supply	0
ZV	Interdenominational Church Halls	0
ZW	Workshops & Buildings	0
ZX	Stores	0
ZY	Fencing	0
ZZ	Earth Mats/Earth Boxes	0

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BREAKDOWN LEVEL 4: EQUIPMENT INDICATOR (Alphabetic)

INDICATOR	DESCRIPTION	REV
	<p>Please Note:</p> <p>The AKZ standard contains a number of limitations that make consistent classification beyond breakdown level 3 difficult.</p> <p>Three distinct level four breakdowns are currently in use at Duvha, specifically for junctions boxes (level 2 indicator K), electronic equipment (level 2 indicator Q) and for field and plant equipment (other level 2 indicators)</p> <p>In addition, some equipment is codified using positional classification. Such systems include the Siemens T3000 Automation racks, the Siemens Teleperm-C cubicles, the KVU cubicles and the CCI bypass controllers. These systems do not conform to AKZ from level 4 downwards – for additional information please refer to the markings on the equipment and the detailed design drawings/documentation for the specific system.</p>	6

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BREAKDOWN LEVEL 4: EQUIPMENT INDICATOR (Alphabetic)		
INDICATOR	DESCRIPTION	REV
	(NB: FOR JUNCTION BOXES SEE pp 40)	6
AA	Intermediate Assemblies/Parent Codes/Systems	0
A	Analytical measurement (chemical analysis, PH value, conductivity)	0
B	Breakers, Switchgear, Contactors, Fused Switches, Tap Changers, Fuses	0
C	Control, closed loop and regulating, sub-distribution and penetration (kiosks, junction boxes etc.), Calculations	6
D	Drives, Prime Mover and Driven Machinery (Pumps, Fans, Compressors, Diesel Engines, Motor Generator Sets, Agitators, Not Actuators, Tensioners [On Conveyors])	0
E	Measurement Of Electrical Quantities	1
F	Flow and quantity rate measurement (include orifices)	6
G	Pressure Elements (Tanks, Pipework, Filters, In-Line Mixer, Orifices) Hoppers, Chutes	6
H	Pipe Hangers	1
I	Ladders, Scaffolding, Doors, Stiles	0
J	Indicators & gauges alarms (sounds) (on control panels, desks, mimics) (transformer tap indicator)	0
K	Protection device & earthing switch & isolators, bushings, VT's and CT's, earthing resistors, earthing transformers	0
L	Level Measurement	0
M	Special measurement (TV monitors, flame monitors, humidity measurement, motion etc.)	6
N	Telephones/call lamps/booths/hooters safety showers & eye baths/emergency sirens	0
P	Pressure measurement, including differential pressure	0
Q	Portable Electrical Appliances Hoists/Lifting Gear and Test Equipment	1
R	Radiation	0
S	Valves, positioning devices with actuator, also manually operated, complete with position measurement (orifices) (Refer to P42)	6
T	Temperature measurement & AC/DC power supplies	0
U	Signal Processing From Interlock Or Automatic Systems	0
V	Fire fighting & first aid equipment trace heating element box	0
W	Electrical power devices (i.e. heaters, 3 points) non rotating power distribution (transformers, rectifiers/electrodes/extensions/lighting), humidifier	0
X	Workshop, Plant, Machines, tools and Lifting Equipment Winches/ Hoists/Crawls	0
Y	Speed and Rotation Measurement	0
Z	Expansion eccentricity, thrusts and vibration measurement	0

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BREAKDOWN LEVEL 4: EQUIPMENT INDICATOR (Alphabetic)

INDICATOR	DESCRIPTION	REV
	JUNCTION BOXES (K level 2) FOLLOW A DIFFERENT CODING AS FOLLOWS	6
A	Analog-Control Associated	0
B	Binary-Drive Associated	0
C	Binary-Contacts	0
F	Termination	0
H	220 V DC	6
L	Low Voltage 60V	6
M	Analog Measurement	0
P	Power Distribution	0
S	Supervisory	0
T	Cold Junction Boxes	0
U	Combined function junction boxes, numbered as below 100 Series front 200 Series rear 300 Series left 400 Series right position (see illustration below)	6

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BREAKDOWN LEVEL 4: EQUIPMENT INDICATOR (Alphabetic)		
INDICATOR	DESCRIPTION	REV
	ELECTRONIC COMPONENTS (LEVEL 2 INDICATOR Q) FOLLOWS A DIFFERENT CODING AS BELOW	6
A	Spare	6
B	Blade Chassis and Blade Servers	6
C	Communications Module	6
D	Power Distribution Unit, Plug Strip	6
E	Intelligent Electronic Device	6
F	Spare	6
G	Spare	6
H	Cabinet, Cubicle	6
I	Input/Output Module	6
J	Backplane	6
K	Computer	6
L	Spare	6
M	KVM switch, KVM	6
N	Network Device	6
P	Processor	6
Q	Cubicle Breaker	6
R	Operator Panel	6
S	Spare	6
T	Diagnostic signals	6
U	Patch Panel, Marshaling Point	6
V	Virtual Machine	6
W	Power Supply	6
X	Terminal Strips	6
Y	Spare	6
Z	Spare	6

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BREAKDOWN LEVEL 4: EQUIPMENT INDICATOR (Numeric)		
INDICATOR	DESCRIPTION	REV
	FOR MEASURING CIRCUITS	
001 - 099	Analog Remote Measurement	0
301 - 399	Binary Remote Measurement	0
401 - 499	Test and Adjustment Measuring Points	0
501 - 599	Local Measurement	0
601 - 699	Temporary Measuring Circuits	0
901 - 999	Combined Measuring Circuits	0
	FOR VALVES (From P39)	6
001 - 099	Control Valves (analog operated)	0
101 - 199	Valves with Electrical Actuator (Binary operated)	0
201 - 299	Valves with Pneumatic, Hydraulic or Solenoid Actuator (Binary operated)	0
301 - 399	First Isolating Valves for Measuring Devices at Tapping Points	0
401 - 499	Drain & Vent Valves	0
501 - 599	Hand Operated Valves (except Valves referred to in 301-399 & 401-499)	0
601 - 699	Mechanically Operated Valves	0
	FOR ELECTRICAL MEASUREMENTS	0
101 - 199	Voltage Measurement	0
201 - 299	Current Measurement	0
301 - 399	Frequency Measurement	0
401 - 499	Megawatt Measurement	0
501 - 599	Mega-Volt-Amp Reactive Measurement	0
601 - 699	Kilowatt-Hour Measurement	0
701 - 799	Kilo-Volt-Amp Reactive-Hour Measurement	0
801 - 899	Power Factor Measurement	0

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BREAKDOWN LEVEL 4: EQUIPMENT INDICATOR (Numeric)		
INDICATOR	DESCRIPTION	REV
	FOR ELECTRICAL SWITCHGEAR	
001	Sequential number used for all circuits except where unique identification is required.	0
002-099	Sequential number for unique identification	0
101	MV - Incomer	7
102	MV – Feeder Breaker	7
103	MV –Bus section	7
104	MV –Bus Riser panel	7
105	MV –VT & Earthing Switch panel	7
106	MV –Maintenance Isolator	7
107	MV –Cable Bus bar panel	7
110	LV – Relay/ Metering panel	7
111	LV – Incomer Air Circuit Breaker	7
112	LV - Supply Air Circuit Breaker	7
113	LV – Bus section/ Interconnector	7
114	LV – Bus Riser panel	7
115	LV – Cable Bus bar Panel	7
119	LV – Incomer MCCB/ CF&S	7
120	LV – Motor Starter	7
121	LV – Feeder MCB/ CF&S	7
130-199	Sequential numbers for unique identification	7
201-299	Castle Keys	0
	FOR BLADE SYSTEMS	6
n00	Blade Chassis n	6
n01	Blade Server 1 in Chassis n	6
n02	Blade Server 2 in Chassis n	6
n03	Blade Server 3 in Chassis n	6

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BREAKDOWN LEVEL 5: COMPONENT INDICATOR (Alphabetic)

INDICATOR	DESCRIPTION	REV
AA	Intermediate Subassembly	0
K	Mechanical Unit Component (Production)	0
M	Mechanical Unit Component (Auxiliary)	0
Q	Unit Component (Non-Electrical) For Control & Instrumentation	0
-	Electrical Unit Component	0
X	Signal Origin	0
Y	Signal Application	0
Z	Gated Signal	0
_	Electronic Component (Underscore Symbol)	6

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BREAKDOWN LEVEL 5: COMPONENT UNIT INDICATOR (Alphabetic)		
INDICATOR	DESCRIPTION	REV
K	MECHANICAL UNIT COMPONENT (PRODUCTION)	
KA	Gate Valve, Globe Valve, Cock, Damper, Rupture Disc (V/V/ Body and Internals)	1
KB	Gate, Door, Dam Door	0
KC	Heat Exchanger, Cooler	0
KD	Vessel, Storage Tank, Surge Tank, Vessel Assembly	0
KE	Turning, Driving, Lifting Or Slewing Devices	0
KF	Endless Conveyor (Escalator Or Conveyor)	0
KG	Spare	6
KH	Heating Or Cooling Device	0
KI	Spare	6
KJ	Crushing Device	0
KK	Pressing & Packaging Device	0
KL	Spare	6
KM	Mixer, Stirrer	0
KN	Compressor, Fan, Blower, Ventilator	0
KO	Spare	6
KP	Pump	0
KQ	Diaphragms	1
KR	Spare	6
KS	Spare	6
KT	Purifier, Drier, Filter, Separator, Strainer	0
KU	Converter	0
KV	Burner	0
KW	Workshop Device	0
KX	Stationary Device	0
KY	Spare	6
KZ	Special Mechanical Device	0

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BREAKDOWN LEVEL 5: COMPONENT UNIT INDICATOR (Alphabetic)		
INDICATOR	DESCRIPTION	REV
M	MECHANICAL UNIT COMPONENT (AUXILIARY)	
MA	Assembly	0
MB	Brake	0
MC	Bearings	1
MD	Rails/Guides/Crawl Beams	0
ME	Distributor	0
MF	Foundation	0
MG	Gearbox	0
MH	Hammers/Anvils	0
MI	Not to be used	0
MJ	Spare	6
MK	Clutch & Coupling	0
ML	Pulley/Idlers	0
MM	Engine (not electric)	0
MN	Spare	6
MO	Not to be used	0
MP	Pressure Component	0
MQ	Spare	6
MR	Piping Part, Ducting Component, Chutes	0
MS	Positioning Drive (Actuator)	0
MT	Turbine	0
MU	Transmission Device	0
MV	Spare	6
MW	Spare	6
MX	Spare	6
MY	Spare	6
MZ	Doors	0

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BREAKDOWN LEVEL 5: COMPONENT UNIT INDICATOR (Alphabetic)		
INDICATOR	DESCRIPTION	REV
Q	UNIT COMPONENT (NOT ELECTRICAL) FOR CONTROL & INSTRUMENTATION	
QA	Spare	6
QB	Sensor/Transducer (Only, If Integrated In "QP")	0
QC	Spare	6
QD	Spare	6
QE	Spare	6
QF	Spare	6
QG	Spare	6
QH	Annunciation System	0
QI	Spare	6
QJ	Spare	0
QK	Spare	6
QL	Spare	6
QM	Spare	6
QN	Controller, Flybolt Governor	0
QO	Spare	6
QP	Measuring Device	0
QQ	Spare	6
QR	Impulse Pipework	0
QS	Equalising Chamber	0
QT	Protection Tube	0
QU	Spare	6
QV	Spare	6
QW	Spare	6
QX	Spare	6
QY	Spare	6
QZ	Spare	6

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BREAKDOWN LEVEL 5: COMPONENT UNIT INDICATOR (Alphabetic)		
INDICATOR	DESCRIPTION	REV
-	ELECTRICAL UNIT COMPONENT	
- A	Assembly and sub-assembly	0
- B	Transducer For Non-Electric to Electric & Reverse	0
- C	Capacitor	0
- D	Binary Element, Time Delay Or Memory Equipment	0
- E	Special Unit Component	0
- F	Protection equipment e.g. Vacuum bottles, Vacuum contactor trolleys, Insulators, indication lamps, Isolator links, Earthing links	6
		0
- G	Generator, Power Supply, Protection Fuses, Current Transformers, Over Current Relay, Earth Fault Relay, Protection Relay, Surge Absorb Relay, Master Trip Relay.	6
- H	Annunciating System	0
- I	Isolators	0
- J	Portable Earths (400 kV & 11 kV)	6
- K	Relay, Miniature Circuit Breaker, e.g. MCB(220 V), Aux Contacts, Relay(11 Kv)	6
- L	Inductance	0
- M	Electrical Motor E.G. Spring Rewind Motors	6
- N	Amplifier, Controller	0
- P	Measuring Device, Testing Equipment, Cable Volt Meter, Ammeter	0
- Q	Power Switching Device (Contactors/ Isolators) E.G. VCB Mechanism	6
R	Resistance/Resistors	0
- S	Switch, Selector, Remote Controls, Pendants, Aux Contacts	0
- T	Transformer (Step Or Earthing Transformers), Voltage Transformer	0
- U	Modulator, Transducer From Electric to Electric Quantities Voltage Transducer, Current Transducer	6
- V	Vacuum Tube, Semi-Conductor	0
- W	Current Transmission System, Wave Guide, Antennae	0
- X	Terminal, Plug, Socket Outlet, Lighting	1
- Y	Electrically Operated Equipment (Magnet, Solenoid, Not Elect Motor)	0
- Z	Cable Termination, Compensating Equipment, Filter, Limiter	0

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BREAKDOWN LEVEL 5: COMPONENT UNIT INDICATOR (Alphabetic)		
INDICATOR	DESCRIPTION	REV
-	ELECTRONIC COMPONENT	
_n	n th repetition of signal	6
_C	CPU	6
_E	Expansion Card	6
_F	Fan	6
_J	Motherboard, Main Card	6
_M	Memory Module	6
_P	Port	6
_S	Storage Device	6
_T	Temperature	6
_U	Power Supply Unit (Internal)	6

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Appendix 8.4 Siemens SPPA T3000 DCS specific coding.

Note: The Siemens T3000 DCS is coded using a KKS system. Please remain aware of this exception when working on the DCS or on equipment with similar AKZ coding ie the Unit LV distribution system (220/380kV)

8.4.1 Cubicle Numbering

Cubicle numbering is done according to the KKS standard. This means the cubicle KKS will have the following structure:-

nn	aaa	nn
----	-----	----

Where:

- nn Unit number
- aaa System indicator
- nn Subsystem indicator

The alphabetic component indicates the system, which has a set of possibilities, depending on the cubicle's contents. These are:-

- **CRA** (Cabinets for automations systems) – This group is used for cubicles containing Process Automation equipment and Protection Automation equipment i.e. Automation Processors, I/O cards, communication modules, etc
- **CRR** (Communications systems, e.g. terminals bus system) – This group is used for cubicles containing equipment connected to the Application Highway. This means Servers, Thin Clients, and network equipment.

The final numeric is used for distinguishing between multiple cubicles in the same system.

Where cubicles contain automation equipment (CRA cubicles) the first digit denotes the Automation Processor number and the second digit denotes whether the cubicle is the main or extension cubicle. For example 01 CRA31 is the first extension cubicle of Automation Processor 3, which performs Process Automation functions at Unit 1.

For cubicles containing other equipment (CRR cubicles) the first digit will denote the subsystem and the second digit denotes a continuation of functionality i.e. either an extension or a redundant pair. The listing for the system assignments is shown in Table 1 below.

Table 1: Table of CRR cubicle numbering

<i>Numeric</i>	<i>System</i>
10	Server Cabinet A
11	Server Cabinet B
20	Network Cabinet A (containing Application & Automation Highways A and some Thin Clients)
21	Network Cabinet B (containing Application & Automation Highways B and some Thin Clients)

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8.4.2 Network and Computer Equipment Numbering

This equipment will be named as follows:

nn	aaa	nn	aa	nnn
----	-----	----	----	-----

Where:	nn	Unitised number
	aaa	System indicator
	nn	Sub system indicator
	aa	Equipment indicator
	nnn	Equipment number

The first numeric is the unit number.

The first alphabetic is the system indicator, which is used to which network a device is connected:-

- **CRR** (Communications systems, e.g. terminal bus system) – This group is used for equipment belonging to the Application Highway
- **CRS** (Communications systems, e.g. Plant bus system) – this group is used for equipment belonging to the Automation Highway
- **CRY** (Common superordinate systems) – this group is used for equipment belonging to the Common Network and the DMZ

The second numeric distinguishes between different subsystems. The first digit indicates the specific subsystem and the second digit is used for extensions or redundancy. The following numerics are assigned to the various subsystems:

Table 2: Second numeric components for all groups

<i>Numeric</i>	<i>Subsystem</i>
10	Device 1A
11	Device 1B
20	Device 2A
21	Device 2B
30	Backup & Restore Server, tec4fde, and Terminal Servers
40	Thin Clients and Printers

The second alphabetic component is selected from the following set:-

- **GK** (Information display and operator control equipment for process computers and automation systems (keyboards monitors printers) – This group is used for all computers and their auxiliaries (keyboards, mice, displays, etc) and printers
- **GN** (Networking equipment (bus couplers and optic transceivers, etc) – This group is used for all networking equipment including patch panels.
- **GW** (Cabinet power supply equipment) – this group is used for the local UPS's installed for each Application Server

The third numeric is to indicate a specific item within the group. For the network devices the third numeric will simply be a counting series in the range 001 to 099 for switches and routers and 101 to 199 for firewalls.

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For computer equipment the following definitions in Table 3 and Table 4 apply:-

Table 3: Third numeric group for GK computer equipment

<i>Numeric</i>	<i>Subsystem</i>
0n0	Computer "n" (tower or blade)
0n1	Keyboard of computer "n"
0n2	Mouse of computer "n"
0n3	KVM A of computer "n"
0n4	KVM B of computer "n"
0n5	Display device 1 of computer "n"
0n6	Display device 2 of computer "n"
0n7	Display device 3 of computer "n"
0n8	Display device 4 of computer "n"
0n9	Reserved for computer "n"

Table 4: Third numeric for GK printers

<i>Numeric</i>	<i>Subsystem</i>
10n	Printer n