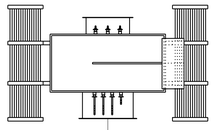
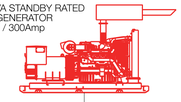
# HAGER QUADRO 5

The distribution board must be factory wired
The distribution board must be factory inspected by the Project Electrical Engineer
Shop drawings must be forward to the Project Electrical Engineer for approval, any work done without the Engineers approval will not be accepted



NEW 500kVA TRANSFORMATOR,
SIZE TO BE CONFIRMED BY KENYA POWER
11kV/420Volt
IMPEDANCE = ?% LIMIT Ik = ?kA



EXISTING 220kVA STANDBY RATED
DIESEL GENERATOR
400Volt / 300Amp

# KIOSK 1

SUPPLY CABLES TO KIOSK A
3x 120mm² x 4-CORE COPPER / XLPE
UPSTREAM CIRCUIT BREAKER: 630AMP

SUPPLY CABLES TO KIOSK A
120mm² x 4-CORE COPPER / XLPE
UPSTREAM CIRCUIT BREAKER: ? (300AMP)

3X 1AMP FUSES
3X DF ELECTRIC FUSE HOLDER
PART No. 485101

CT RATIO:
800 : 5
CLASS 1

LOVATO DMG 500
DIGITAL METERIHAGER
MULTIMETER
SM102ENG INSTRUMENT

**HAGER**
**HEE800H**
**LSI TRIP UNIT (320-800AMP)**

OVERLOAD CURRENT SETTINGS:
0,4 - 0,5 - 0,6 - 0,7 -0,8 -0,85 - 0,9 - 0,95 - 1
"Ir" = In x 0,85 = 680Amp
Time delay: 0,5 - 1,25 - 2 - 2,5 - 5 - 10 - 15 - 20 - 25 - 30seconds
"tr" = 15

SHORT CIRCUIT SETTINGS:
1 - 1,5 - 2 - 2,5 - 3 - 4 - 6 - 8 - 10 - non
"Is" = 800 x 6 = 4 800Amp
Time delay: 20 - 80 - 160 - 260 - 360 - 460milli seconds
"Ts" = 20

INSTANTANEOUS CURRENT:
2,5-3-4-6-8-10-12-15-non
"Ig" = In x 2 = 1 600Amp

| TOTAL DIVERSIFIED POWER | 608kVA / 877Amp | |
|---|---|---|
| ELECTRIC. DIVERSIFIED POWER | 608kVA | |
| DIVERSIFIED POWER | DIVERSITY FACTOR FOR SUB MAIN DB SUPPLIES | k__ = 0,7 |
| | TOTAL NUMBER OF SUB DB'S | 6 |
| | TOTAL SUB MAIN DB SUPPLY | 868kVA |
| DIVERSIFIED POWER | CIRCUITS DIVERSIFIED POWER | -kVA |
| | k____ CIRCUITS ON THIS DB | k____ = 1 |
| | TOTAL NUMBER OF CIRCUITS | 1 |
| | CIRCUITS DIVERSIFIED TOTAL POWER | -kVA |
| | CIRCUITS UN DIVERSIFIED TOTAL POWER | - kVA / -Amp |

DEHNventil M2 TT
Class I + II + III
Part No. 954 315 DV M2 TT 255
Inominal (I_n) - No (DNA (B/D))
Inominal IN-(EARTH): 100kA (B/D)
Imax IN-(EARTH): 100kA (B/D)
Iimpulse IN-(EARTH): 100kA (B/D)
Itotal E.1+2+(L3+N-PE): 100kA (10/350)

250 AMP
FUSES

## NORMAL POWER 3P+N, Ib=800Amp, Ik= 25kA, t= 1sec

MAINS SENSING
TO SOCOMEC ATyS g
AUTOMATIC TRANSFER SWITCH

NEUTRAL (N)
BLUE (B)
WHITE (W)
RED (R)

DEHNrail M 4P
DR M 4P 255
PRODUCT CODE: 953 400
CLASS III SURGE
ARRESTOR

DF ELECTRIC
485107
4-POLE
4AMP FUSES

INDICATION LAMPS

LABEL TO READ:

"NORMAL POWER AVAILABLE
LAMPS NORMALLY ON"

**HAGER**
**HNA160U**
**40kA**
**100-160AMP**

**HAGER**
**HNA160U**
**40kA**
**100-160AMP**

**HAGER**
**HNA160U**
**40kA**
**100-160AMP**

**2x HAGER**
**HHA040Z**
**40AMP**
**25kA**

| CIRCUIT No. | - | - | - | - |
|---|---|---|---|---|
| DESCRIPTION | - | - | - | - |
| CABLE SIZE | - | - | - | - |
| EARTH SIZE | - | - | - | - |
| DISTANCE | - | - | - | - |
| POWER | -VA / -Amp | -VA / -Amp | -VA / -Amp | -VA / -Amp |
| DIVERSIFIED POWER | k = 0.8 k = 0.7 -VA / -Amp | k = 0.8 k = 0.7 -VA / -Amp | k = 0.8 k = 0.7 -VA / -Amp | k = 0.8 k = 0.7 -VA / -Amp |

**HAGER**
**HEE800H**
**LSI TRIP UNIT**
**(320-800AMP)**
**SET AT 630AMP**

**HAGER**
**HEE800H**
**LSI TRIP UNIT**
**(320-800AMP)**
**SET AT 630AMP**

S1

S2

SOCOMEC D20
REMOTE DISPLAY
UNIT ON DOOR

SOCOMEC ATyS g
AUTOMATIC TRANSFER SWITCH

200-415Volt, 800AMP, 50Hz, 25kA, 3-POLE
TOP ENTRY SOURCE TERMINALS & BOTTOM LOAD TERMINALS

D20 HMI SCREEN
3m RJ45 CABLE
HMI TO BE DOOR/FACIA PLATE MOUNTED

SEE SEPERATE DRAWING FOR DETAILED WIRING

LOAD

DF ELECTRIC
485107
4-POLE
4AMP FUSES

NEUTRAL (N)
BLUE (B)
WHITE (W)
RED (R)

GENERATOR SENSING
TO SOCOMEC ATyS g
AUTOMATIC TRANSFER SWITCH

INDICATION LAMPS

LABEL TO READ:

"GENERATOR RUNNING
POWER AVAILABLE
LAMPS NORMALLY OFF"

## GENERATOR POWER 3P+N, Ib=800Amp, Ik= 25kA, t= 1sec

**HAGER**
**HNE800H**
**50kA**
**320-800AMP**
**SET AT 630**

**HAGER**
**HHA040Z**
**40AMP**
**25kA**

**HAGER**
**HHA040Z**
**40AMP**
**25kA**

| CIRCUIT No. | MDB | DB-DC | DB-LAB | SPACE FOR 2x HAGER HMJ TYPE BREAKER FRAMES |
|---|---|---|---|---|
| DESCRIPTION | MAIN DB | DIRTY CHANGE BUILDING | LABORATORY EMERGENCY SLAUGHTERING | |
| CABLE SIZE | 3x 120mm² x 4-CORE | 10mm² x 5-Core Copper | 6mm² x 5-Core Copper | |
| EARTH SIZE | 3x 70mm² INS. | - | - | |
| DISTANCE | - | - | - | |
| POWER | -VA / -Amp | -VA / -Amp | -VA / -Amp | |
| DIVERSIFIED POWER | k = 0.8 k = 0.7 -VA / -Amp | k = 0.8 k = 0.7 -VA / -Amp | k = 0.8 k = 0.7 -VA / -Amp | |

FOR TENDER PURPOSES ONLY

## DANGER SIGNS ON FRONT DOOR AND ABOVE MAINS ISOLATORS

DB MAIN LABEL:

**KIOSK 1**
**SUPPLIED FROM TRANSFORMER**
**3x 120mm² x 4-CORE + 3x 70mm² EARTH**
**25kA / 800AMP BUSBAR**

**KIOSK 1**
**SUPPLIED FROM GENERATOR**
**1x 120mm² x 4-CORE + 1x 70mm² EARTH**
**25kA / 800AMP BUSBAR**

LABELING DETAILS:

PREVER 3M Grafoplast SI2K EVO Thermal Printing System or TRAFFOLYTE Engraving

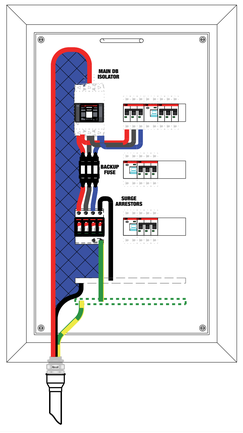
| | |
|---|---|
| MATERIAL: | TRAFFOLYTE |
| LETTERING/NUMBERING COLOUR: | BLACK |
| DB MAIN LABEL: | MAIN DISCRIPTION: 10-15mm TEXT SIZE<br>FIXED BY LABEL HOLDER OR RIVITED<br>SECONDARY INFO: 5mm TEXT SIZE<br>FIXED BY LABEL HOLDER OR RIVITED |
| BREAKER LABELS: | 5mm TEXT SIZE<br>FIXED BY ALUMINIUM LABEL HOLDER |
| EARTH LEAKAGE NEUTRAL BARS: | 5mm TEXT SIZE - "E/L NEUTRAL BAR"<br>FIXED BY RIVITS |

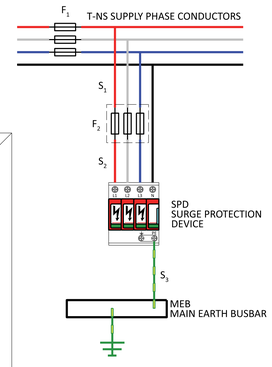
**DEHN SURGE ARRESTORS WIRING:**

| | |
|---|---|
| LIVE'S & NEUTRAL WIRING SIZE CLASS I | SAME AS PHASE ○ |
| EARTH WIRING SIZE CLASS I | SAME AS PHASE ○ 10mm² ○ 16mm² ○ 25mm² ○ 35mm² ○ |
| LIVE'S & NEUTRAL WIRING SIZE CLASS I & II | SAME AS PHASE ○ |
| EARTH WIRING SIZE CLASS I & II | SAME AS PHASE ○ 10mm² ○ 16mm² ○ 25mm² ○ 35mm² ○ |
| LIVE'S & NEUTRAL WIRING SIZE CLASS II | SAME AS PHASE ○ |
| EARTH WIRING SIZE CLASS II | SAME AS PHASE ○ 4mm² ○ 6mm² ○ 10mm² ○ 16mm² ○ |
| LIVE'S & NEUTRAL WIRING SIZE CLASS II & III | SAME AS PHASE ○ |
| EARTH WIRING SIZE CLASS II & III | SAME AS PHASE ○ 4mm² ○ 6mm² ○ 10mm² ○ 16mm² ○ |
| LIVE'S & NEUTRAL WIRING SIZE CLASS III | SAME AS PHASE ○ |
| EARTH WIRING SIZE CLASS III | SAME AS PHASE ○ 4mm² ○ 6mm² ○ 10mm² ○ 16mm² ○ |

EARTH WIRING COULORS — GREEN/YELLOW INSULATED
WIRING ROUTING 1 — **MAY NOT BE PARALLEL/TIED TO PHASE OR NEUTRAL WIRING**
WIRING ROUTING 2 — **90 DEGREE BENDS TO BE AVOIDED IF POSSIBLE**
SEE MANUFACTURERS WIRING INSTRUCTIONS

DEHN MANUFACTURERS REQUIREMENTS:
S, LENGHT: $S_1 + S_2 + S_3$ = 500mm² MAXIMUM
S, SIZE: 10mm²
$F_1$: if $F_1$ > 125AMP then $F_1$ = NOT REQUIRED
S, SIZE: 10mm²
S, LENGHT: $S_2 + S_3$ = 500mm² MAXIMUM
S, SIZE: 10mm²
S, LENGHT: $S_3$ = 500mm² MAXIMUM




**THE DISTRIBUTION BOARD MANUFACTURER:**

**ALL WIRE TERMINATIONS NOT TERMINATED IN CIRCUIT BREAKERS MUST BE DONE WITH BOOTHLACE FERRULS**
Normally all Neutrals, Earths, control wiring and all wiring terminated in screw terminals
HellermannTyton Square (quad) profile crimpers to be used;
Crimper YAC5 for 0,5 - 6mm² & Crimper YYT86 for 6 - 16mm²

**THE DISTRIBUTION BOARD MANUFACTURER:**

**MUST ENSURE THAT ALL CIRCUIT BREAKER SETTINGS IS SET AS PER ENGINEERS INSTRUCTIONS. THE BOARD MANUFACTURER MUST ALLOW IN HIS RATES FOR THE SWITCHGEAR / CONTROLLER SUPPLIERS TO DO ALL SETTINGS IN THE MANUFACTURERS WORKSHOP**

**THE DISTRIBUTION BOARD MANUFACTURER:**

**CONTROL WIRING MUST BE WIRED IN GREY WIRING. EACH WIRE END OF CONTROL WIRING MUST BE LABELED WITH HELLERMANN TYTON HELAGRIP MARKERS**

**FOR CONTRACTORS:**

**ALL THREE WIRES OF EACH CIRCUIT MUST BE LABELLED WHERE IT TERMINATE ON THE CIRCUIT BREAKER / NEUTRAL BAR & EARTH BAR WITH HELLERMANN TYTON HELAGRIP MARKERS: L1 or P1 etc.**

| REV | DATE | DESCRIPTION OF REVISION |
|---|---|---|
| A | 7 FEBRUARY 2023 | ISSUED FOR TENDER |

PRINCIPLE AGENT: SCIP ENGINEERING GROUP
JOHANNESBURG
WITBANK

CLIENT: ISIOLO COUNTY GOVERNMENT

PROJECT DESCRIPTION
**ISIOLO ABATTOIR**
**(ISIOLO COUNTY - KENYA)**

PLAN DESCRIPTION
**PHASE 2**
**SINGLE LINE DIAGRAM : KIOSK A**

DESIGNED BY: Veld du Toit
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DRAWING No.: **2103 - SLD - DB - 001 - 0**

| PROJECT No. | AREA | DISCIPLINE | DRAWING No. | REVISION |
|---|---|---|---|---|

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