Eskom National Transmission Company South Africa ™	**Specification**	**NTCSA**

Title: **Technical Specification for Simmperpan Energy Performance Certificate Smart Meters Installation**

Unique Identifier:	**N/A**
Alternative Reference Number:	**N/A**
Area of Applicability:	**Transmission Real Estate**
Documentation Type:	**Specification**
Revision:	**N/A**
Total Pages:	**36**
Disclosure Classification:	**CONTROLLED DISCLOSURE**

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EXECUTIVE SUMMARY

This document outlines technical specification requirements for Simmerpan Energy Performance Certificate supply, delivery, off-loading, install, test and commission of the Smart meters in accordance with OEM Specification and SANS. The project addresses the compliant requirements of the Department of Mineral Resources and Energy (DMRE) to meet the national energy (Act No. 34 of 2008) for the Mandatory Display and Submission of Energy Certificates for Buildings published under Government Notice No. 700 in Government Gazette 43972 of 8 December 2020. The smart meters will used for measure energy consumptions for Eskom Simmerpan as specified in this document to meet the above requirements.

1. INTRODUCTION

This document outlines the technical specification and standard compliance requirements for the procurement of commercial building electricity smart meters installation. The specifications aim to ensure that the smart meters are accurate, reliable, durable, and capable of supporting advanced metering infrastructure (AIM) functionalities for purpose of achieving energy consumption data recording for analysis of utilisation of electricity to achieve energy efficient for combatting climate change and reduction carbon footprint.

2. SUPPORTING CLAUSES

2.1 SCOPE

This section contains the technical specification relating to the commercial enquiry specification requirements for delivery technical requirements for the design, delivery, off-loading, testing, commissioning, handing over an approved working order and maintenance during the defect's liability period of the site. The *Contractor* shall install, test and issue Certificate of Compliance, test certificates, operating and maintenance manual for Smart meters. *Contractor* is to ensure that Smart meters are type tested. *Contractor* shall ensure that all Low voltage cabling will be installed to supply data concentrate and terminated at the meter kiosk to power data concentrator and all building connected smart meter are hard wired to the building distribution board (DBs) per floor. Low voltage supplies will be fed from the Mini sub dedicated to a specific building and supply power to the Meter kiosk hosting data concentrator and Master Smart meter. The cable will be sized, installed, tested and commissioned in accordance to D-DT-1878 (se appendix B)

2.1.1 Purpose

The purpose of this technical specification is to describe and specifies the technical requirements for the smart meters procure, delivery, off-load, installation test, commissioning, and handover Smart meters to meet standard and specification.

2.1.2 Applicability

This specification is applicable to Eskom Simmerpan

2.2 DEFINITIONS

Definition	Description
Accredited body	Organization or facility that has been accredited by the relevant national body or by member of recognition arrangements of the international Laboratory Accreditation Cooperation (ILAC) or the international Accreditation Forum (IAF)
Submission	The tender returnable submitted by the tenderer in accordance with the requirements of the enquiry.
Tender Evaluator	End-users and technical experts nominated by the end-user and Divisional technical functionaries with the necessary technical expertise.
Tenderer	The person, firm or company, whether incorporate or not, who tenders for the work with a view to execute the works on contract.

2.2.1 Classification

Controlled disclosure: controlled disclosure to external parties (either enforced by law, or discretionary).

2.3 ABBREVIATIONS

Abbreviation	Description
AMI	Advance Metering Infrastructure
LPU	Large Power User
SANEDI	South Africa National Energy Development Institute
SANS	South African National Standard
NBEPR	National Building Energy Performance Registered
GSM	Global System for Mobile Communication System

2.4 ROLES AND RESPONSIBILITIES

Compiler: Responsible to compile the document and to ensure that the content is integrated to reflect the requirements of stakeholders forming part of this project.

Functional Responsibility: The Functional Responsible person is responsible to approve the content of the document and assure its correctness before the document is submitted for authorisation.

Authoriser: The document authoriser is responsible to ensure that the correct processes were followed in developing this document and that the relevant stakeholders have been involved. The Authoriser also reviews the document for alignment to business strategy, policy, objectives, and requirements. He/she will authorise the release and application of the document.

2.5 PROCESS FOR MONITORING

This document will be internally reviewed by the Transmission Real Estate and Simmerpan facilities management team.

2.6 RELATED / SUPPORTING DOCUMENTS

Due to the sensitivity of the site, relevant supporting documentation and floor diagrams will be made available to the successful *Contractor* after agreeing to a non-disclosure clause.

3. *CONTRACTOR'S* SCOPE OF WORK

3.1 SYSTEM OVERVIEW

Contractor ensures that all Smart meters are installed, interfaced with Eskom GSM/fibre network and all meters located in the National Control Building are connected to Data concentration as shown in the overview of the smart meter architecture (see figure 1).

Figure 1: Simplified Smart Meter Architecture

Contractor shall ensure that Advance Metering Infrastructure (AMI) Smart meters are wired to the Data concentration which will concentrate all data information from all smart meter located in each floor of the building for the management of energy consumption data, actual energy utilised and billing for the purpose of Energy Performance Certification data collection. Contractor ensures that user can be able to read and download energy consumption at the master mart meter that is located at the meter kiosk.

3.1.1 Hardware Specifications:

Contractor shall 3-phase Smart Split Meters with External GSM Modem, 400V, Current 100A, 3-phase, Smart AMI meter, with Low-Power Wide Area Network communication between meters using GSM. Contractor ensures that meter incorporates integra 100A load switch, RTC, Time-of-Use, and external GSM modem. Smart meters shall be provided with modem with any network provide to ensure that easy flow communication of all the meters in the building and to the master meter and data concertation. Contractor ensures that Smart Meter can monitor active energy (kWh) and Reactive Energy (kVarh).

3.1.2 Software and Firmware

Contractor shall provide the latest software application operating system, application software, firmware updates, and the management of data for reporting and analysis.

3.1.3 Communication Protocols:

Contractor shall ensure that all Smarter Meters can communicate with one another using external GSM modem using Low-Power Wide Area Network (LPWAN) of which cellular Internet of Things (IoT) technologies and provide communication standards supported by the smart meter, including both wired and wireless options, network security protocols, and compatibility with utility communication networks.

3.1.4 Metering functions

Contractor shall ensure that all smart meters are equipped with two-way communication between master smart meters and meters allocated in the building and data concentrations. Meters shall be able to measure energy consumptions, accurately to meet standard and compliance with relevant measurement standards.

3.1.5 Installation Requirements

Contractor shall provide pre-installation checks, the installation procedure itself, and post-installation verification. Contractor provides installation of smart meters as outlined in below as per the meter kiosk and its corresponding buildings.

3.1.5.1 National Control Building

- 1 x Smart Meter is required at the national control centre ground floor to metering, measuring, and monitoring of energy consumptions for National Control Offices and Grid Access. The smart meter will send data to the master smart meter on the meter kiosk located adjust to the National control centre mini substation.
- 1 x Smart Meter is required for metering, measuring, and monitoring of energy consumptions for National Control Operation Performance Office on the 1st floor.
- 1 x Smart Meter is required for metering, measuring, and monitoring of energy consumptions for National Control Support System Office on the 2nd floor.
- 1 x Smart Meter is required for metering, measuring, and monitoring of energy consumptions for National Control Centre Support on the 3rd floor.
- 1 x Smart Meter is required for metering, measuring, and monitoring of energy consumptions for National Control Centre Support on the 4th floor.

Figure 2: National Control LPU Meter Kiosk

- 1 x Master Smart meter and a Data concentrator DC 450 G3 PLC DC 230V shall be installed at the Meter Kiosk shown in figure 2 in accordance with Appendix B and C.

3.1.5.2 Regional Control Centre

- 2 x Smart Meters are required for the distribution regional office building within national control centre, the building has floors namely ground floor and 1st floor.

- 1 x Smart meter will be located on the ground floor to monitor, measure energy consumption, and send data to the master smart meter located in the National Control Centre Mini-Sub Meter kiosk (See Appendix B and C)
- Install 3-ph PVC cabling and Earthing Cabling (See Appendix B and C)

3.1.5.3 Ackerman Building

- Ackerman Building is supplied from the Security Office Substation 11 as seen in figure 3.
- Security Office Substation meter kiosk shall be used for installation of mater smart meter.
- All 5 distribution boards (DB) in Ackerman are supplied form Security Office Substation.
- 5 x Smart Meters is required for measuring and monitoring of energy consumption for Ackerman ground floor and 1st floor. Ackerman building consist of ground floor and 1st floor hosting Distribution Plant Maintenance Department.
- 1 x Master Smart Meter shall be installed at the Ackerman Security Office Mini-substation Meter Kiosk. Energy consumption data shall be collected from the two Smart meters to be located at ground floor and 1st floor and all the energy consumptions data from both meters shall be send to Data concentrator via wireless GSM modem.
- Communication will be via meters will be done with provision of Eskom IT and NMC telecommunication to ensure smooth configuration and interface with communication schemes architecture and IP address allocation for cybersecurity purposes and remote reading of the meter data.
- 1 x Interface Data concentrate DC 450 G3 PLC DC 230V will be installed at the Security Office Mini-substation 11kV Meter Kiosk (See Appendix B and C)
- 1 x Internal GSM Modem
- Install LV circuit Breaker at Data centre kiosk (See Appendix B and C)

Figure 3: Security Office Mini-Substation 11kV Meter Kiosk

3.1.5.4 Simmer Centre Building

- 2 x Smart Meters for Simmer Centre Central Grid Block A Ground floor.
- 2 x Smart Meters for Simmer Centre Central Grid Block B 1st Floor

- 2 x Smart Meters for Simmer Centre Central Grid Block C, ground floor and 1st floor.
- 2 x Smart Meters for Simmer Centre Energy Planning and Market and Finance, one meter ground floor and other on the 1st floor.
- 1 x Master Smart meter and a Data concentrator DC 450 G3 PLC DC 230V shall be installed at the Simmer Centre new Meter Kiosk (See Appendix B and C)
- 1 x Internal GSM Modem
- Install 3-ph PVC cabling and Earthing Cabling (See Appendix B and C)
- Install Data Concentrator kiosk (D-DT-1878)

3.1.5.5 Matumi Building

- Matumi building is supplied from substation as (see figure 4)
- Matumi Meter kiosk 500kVA LPU Meter Kiosk will be used for the installation of Master Smart Meter.
- 2 x Smart Meters for Matumi Building ground floor and 1st floor.
- 1 x Master Meter with Data concentrator will be installed at Matumi LPU Meter Kiosk 500kVA at the mini sub located adjust to the Matumi building or supplying Matumi building as shown below in figure 4.
- Install 3-ph PVC cabling and Earthing Cabling (See Appendix B and C)
- Install LV circuit Breaker at Data centre kiosk (See Appendix B and C)
- 1 x Internal GSM Modem
- Install Data Concentrator kiosk (See Appendix B and C)

Figure 4: Matumi Building 500kVA LPU Meter Kiosk

3.1.5.6 Engineering Building: PTM&C Engineering Building

- Existing Tupli Substation as shown in figure 5, shall be equipped with the following equipment.

- 6 x Smart Meters shall be installed for measuring, metering, and monitoring energy performance for ground floor and upper floors (See Appendix B and C).
- 1 x Master Smart meter with data concentrator will be installed at the Mini-substation LPU meter kiosk located behind the Engineering Building.
- 1 x DC 450 G3 PLC DC 230V Data concentrator shall be installed at the existing Tupli Mini-substation Metter Kiosk as shown in figure 5.
- 1 x Internal GSM Modem
- Install 3-ph PVC cabling and Earthing Cabling (see Appendix B and C).
- Low Voltage Circuit Breaker at Data centre kiosk (See Appendix B and C).
- Install Data Concentrator kiosk (See Appendix B and C)

Figure 5: Tulip Substation 5 Meter Kiosk

3.1.5.7 Hume Building

- Hume building requires 6 x Smart Meter, 5 x smart meter for both ground floor, first floor and second floor and a master meter with data concentration.
- 1 x Master Smart meter with Data concentrator will install at the Main distribution board room (See Appendix B and C)
- 1 x DC 450 G3 PLC DC 230V Data Centre wired to the Master smart meter at the Hume Building Distribution Board (Appendix B)
- 1 x Internal GSM Modem
- Install 3-ph PVC cabling and Earthing Cabling (See Appendix B and C)
- Install Data Concentrator kiosk (see Appendix C)

3.1.5.8 Switchgear Building

- 1 x Smart meters will be installed at the 1st floor at the distribution board room.
- 1 x Smart meter will be installed at the 2nd floor at the distribution board room.
- 1 x DC 450 G3 PLC DC 230V Data Concentration (see Appendix B)
- 1 x Internal GSM Modem
- Install 3-ph PVC cabling and Earthing Cabling (see Appendix B & C)
- Low Voltage Circuit Breaker at Data centre kiosk (See Appendix B &C)
- 1 x Master smart meter wired to the Data Concentrator at the kiosk (see Appendix C)
- Install a new Data Concentrator kiosk as show in Appendix B

3.2 COMPLIANCE TO LEGISLATION, STANDARD AND PROCEDURES

The *Contractor* complies with the latest revisions of the legislations, standards and procedures listed in the subsection below.

The *Employer* provides the Eskom standards and procedures to the *Contractor.*

All other legislations and standards will not be supplied by the *Employer*. It is the Contractor's responsibility to source all other standards for the purposes of this project.

3.2.1 Legislations

- Occupational Health and Safety Act, Act 85 of 1998.
- National Building Regulations and Building Standard Act No. 103 of 1977
- SANS 10400 The application of the National Building Regulations – All Parts.
- Engineering Professional Act, 2000 (Act No. 46 of 2000)
- Department of Employment and Labour (DOL) mandate to the South African Qualifications Certification Committee (SAQCC) Fire

3.2.2 Standards and Codes

3.2.2.1 Technical Standards

- 140-170000189 Standard for Current and Future Metering Implementation
- SANS 10400-XA Building Occupancy Classes
- SANS 1544 Energy Performance Certificate
- 240- 170000540 National Contractor for Smart Meters
- 240-77224541 Standard for the operation of the metering data acquisition system

3.2.2.2 Quality

- 240-105658000 Supplier Quality Management: Specification
- QM58 Quality Management Standard

3.2.3 Warranty and Support

- The system shall carry a minimum local (South African) warranty of 36 months with the provision of 24-hour telephonic support from the commissioning date.
- Supplier spares holding should include minimum replacement spares to restore service of the system in its entirety within 8 working hours.
- Upon request, the supplier to provide list of reference sites with contact details where the product on offer has been successfully installed and the year of implementation.

3.3 EQUIPMENT ENVIRONMENTAL CONDITION SPECIFICATION

The *Contractor* provides equipment that is rated for the environment that is suitable for the equipment. The *Contractor* incorporates factors such as ambient temperature, relative humidity, dust ingress, water ingress, wind, oil, access for maintenance and theft when selecting the equipment and its siting. The operating conditions where equipment will be installed must not reduce the life expectancy of the equipment.

3.4 QUALITY CONTROL AND QUALITY ASSURANCE SPECIFICATIONS

The *Contractor* is required to comply with the Eskom 240-105658000 Supplier Quality Management Specification.

3.5 DETAILED SCOPE OF WORK

3.5.1 General Requirements

- The *Contractor* shall supply, deliver, off-load, install, and test and commission the Smart meters.
- The Contractor shall re-use the existing Meter Kiosk to Install the Master smart meter and Data concentrators.
- The Contractor shall provide the Meter Kiosk where there is no existing Meter Kiosk to install Master Smart Meter and Data concentrators.
- The *Contractor* shall provide the tests to verify certificates indicating characteristics of Smart meter communication such as type tests, routine tests, and any special test in accordance with SANS/IEC 62056.
- The Contractor is to ensure that all type test carried out by the manufacturer, in his workshop or at any suitable laboratory of his choice is handed over to the Employer after commissioning.
- The *Contractor* shall ensure that the type test includes the following requirements as specified in table 1.
- The *Contractor* ensures that characteristics of the metallic screen include resistance with the calculation for the prospective fault current in the fusible element circuit.
- The *Contractor* is to provide the Test procedure for connecting additional devices including Modbus devise.
- The *Contractor* shall provide the Test report for Smart meter reading in accordance with SANS/IEC 62056.

- The *Contractor* is to ensure that mechanical operation circuit-breaker satisfy tripping of the circuit-breaker with the closing release energize and checked under no-load condition.
- The *Contractor* shall provide circuit-breaker with Thermal-magnetic trip units for overload and short-circuit protection.
- The *Contractor* shall deliver, off-load, test and commission and produce test report, checklist, and issue CoC certification at the Meter Kiosk.

3.5.2 Location of the Works / Area to be covered.

The works shall be performed at Simmerpan DEC National Control

3.5.3 Drawings and Tables Applicable to the Project

- Tables are included into the Works Information
- Construction drawings will be issued to the successful contractor on contract award.

3.5.4 Key Personnel Requirements

3.5.4.1 Project Manager

- The *Project Manager* shall be allocated to the project for management of the project and providing regular feedback to the *Employer*'s Project Manager.
- The *Project Manager* shall also attend all required meetings and be responsible for all correspondence between the *Employer* and the *Contractor*.

3.5.4.2 Project Site Supervisor

- The *Project Manager* shall also attend all required meetings and be responsible for all correspondence between the *Employer* and the *Contractor*.
- This individual shall also serve as the on-site interface between the *Employer*'s representative and the *Contractor*.

3.5.4.3 Accredited Access Equipment Personnel

- The *Contractor* shall indicate the method of accessing certain areas and the equipment to be used, especially for accessing work areas above ground level.
- Should scaffolding be used by the *Contractor*, the Contractor shall suitably qualified personnel for the erection, use, dismantling and inspection of access scaffolding.
- Use of all other access equipment shall be subject to approval from the *Employer* prior to such equipment being allowed on site.
- Personnel handling and inspecting all access equipment shall be in possession of the respective valid accredited training certificates for the respective equipment.

3.5.4.4 Accredited Technology / Product Specific Technical Personnel

- The *Contractor* shall ensure that provision is made for OEM accredited lab installation & commissioning Technicians for the duration of the project.
- All personnel shall be in possession of valid accreditation documents from the respective OEM in this regard.

3.5.4.5 Additional Personnel Requirements

- All other scope requiring accredited personnel in that field shall be provided for the respective portion of work.
- All specialist personnel shall have the valid accreditation / training certificates for their respective fields of work.
- The *Contractor* is required to provide an organogram of the crew that they intend deploying on the project.

3.5.4.6 Component Power Supplies

- All components shall be powered by OEM specified power supplies capable of providing the recommended power to each component / module in the system.

3.5.4.7 Factory Acceptance Testing (FAT)

- The *Contractor* shall fully rig the system and configure it at their premises for Factory Acceptance Testing by the Employer. The system must be rigged in a manner that would indicate how it appears once installed on site.
- The *Contractor* shall submit the FAT criteria documents together with supporting drawings /schematics to the Employer 14 working days prior to the FAT exercise for review and acceptance.
- The *Employer* may request amendments to the criteria prior to it being approved.
- The *Contractor* shall use the pre-approved FAT criteria documentation and associated schematics / drawings to conduct the FAT exercise.
- All defects identified during the FAT exercise shall be corrected with 72 hours and feedback provided to the Employer's representative.
- The *Employer*'s representative shall confirm whether the defects have been corrected before permission is granted to transport the system to site.
- FAT documents shall be signed by all relevant stakeholders and included in the Quality File of the project as part of the document records.
- The *Employer* may opt to engage with the Contractor in one or more pre-FAT sessions prior to the main FAT exercise to enable a smooth testing exercise.
- FAT documents are together with architectural schematics for all equipment racks are to be submitted to the Employer's representative within 21 working days of the contract being entered into.

3.5.4.8 Site Acceptance Testing

- SAT criteria documents together with supporting drawings/schematics documents are to the submitted to the Employer together with the FAT documents (14 days prior to FAT) for review and acceptance.
- The *Employer* may request amendments to the criteria prior to it being approved. The *Contractor* shall use the pre-approved SAT criteria documentation and associated schematics / drawings to conduct the SAT exercise.
- SAT shall involve permanent intended power supplies and permanent speaker lines.

- All defects identified during the SAT exercise shall be corrected with 72 hours and the system re-checked with the Employer's representative.
- SAT documents shall be signed by all relevant stakeholders and included in the Quality File of the project as part of the document records.

3.5.4.9 Warranty and Support

- The *Contractor* shall be suitably accredited in all aspects for the product being proposed.
- A Letter of Accreditation is required to be submitted in this regard.
- The tenderer shall be able to offer all technical, spares, and for the product being proposed.
- The tenderer shall have a history of supplying products of this nature for a period of 5 years or have personnel experienced in this field for a period of no less than 5 years.
- The tenderer shall supply a minimum of 5 traceable reference sites with contact person details where the proposed product has been successfully installed by them.

3.5.4.10 Commissioning

- The *Contractor* is required to comply with the Eskom 240-105658000 Supplier Quality Management Specification.

3.5.4.11 Handover

- The *Contractor* shall handover the works after commissioning procedure standards has been confirmed and issuing of Certificate of Compliance has been made signed and approved by accredited lab Master Installation Electrician.

4. CONFIGURATION MANAGEMENT

- All name coding shall be supplied by the *Employer*.
- Labels shall be manufactured as per configured data by the Contractor and affixed.
- *Employer* shall provide the *Contractor* with a Labelling Standard which provides a guideline on the manufacture of the labels.

4.1.1.1 As built/ floor plan drawings

- As-built and Floor plan drawings shall be supplied to the successful Contractor for the areas in which installation is required.
- Terminal equipment locations and proposed cable routes shall be indicated on these drawings.
- The *Contractor* shall red-line drawings to depict and clearly show the revision mark-up and latest revision as per Eskom convention depicting installed cable, junction boxes and terminal equipment.

4.1.1.2 Documentation

The following documents are to be supplied by the Contractor within the pre-determined schedule:

- Functional description of the system
- Electrical Schematic diagrams, including loop diagrams.
- General Arrangement drawings of the panels
- Component lists per panel and per section.
- Termination diagrams for each Enclosure, DB, and Maintenance DB box.
- Operation and Maintenance Instruction manual.
- Original Manufacturers product documents
- SAT & FAT Procedure
- Commissioning procedure
- Handover certificates
- Inspection and Test Procedures

4.1.1.3 Re-measurable items

- Notwithstanding that practical care was exercised in preparing the BOQ, but all quantities given herein shall be deemed to be estimated quantities of the work to be done but they are not to be taken as actual and correct quantities of the work to be executed and they are not to absolve the Contractor of his obligations under the *Contract*.
- All work shall be re-measurable.

4.1.1.4 Tender returnable (technical)

The following documents shall from part of the required documents to be submitted with the tender.

4.1.1.4.1 Method Statements

The *Contractor* shall provide detailed method statements on how he intends to conduct the *Works*; this shall apply to all, and any part of the *Works* as provided in the conditions of contract. The *Contractor's* comprehensive Method Statements shall demonstrate the following:

- Sound understanding of the whole of the Works,
- Understanding of the required competencies in executing all activities of the whole of the Works,
- The logical sequencing in which the Works are to be executed and,
- The Safety, Health, Environmental and Quality considerations in execution of the Works.

4.1.1.4.2 Sample Inspection and Test Plans (ITPs) and Quality Acceptance Documents

- The *Contractor* shall provide sample ITPS & QA documents for all activities of the scope. These documents shall demonstrate the following:
- The *Contractor*'s understanding of the key Witness, Hold, Inspection and Verification points of the exercise.
- The *Contractor*'s expectation in terms of an acceptable standard of workmanship.

4.1.1.4.3 Draft Schedule

- The *Contractor* shall submit a draft schedule depicting all activities for the entire scope. The draft schedule shall indicate the various aspects of each area of installation and the duration per activity.
- The schedule shall be based on a 5-day work week excluding any public holidays and weekends.

4.1.1.4.4 Data / Specification sheets

- The *Contractor* shall provide data / specification sheets for all components of the system inclusive of terminal equipment and cabling.
- Where the data sheet includes several variants of a product or several products, the proposed product shall clearly be marked.
- System brochures shall also form part of this requirement.

4.1.1.4.5 Product Certification / Conformity Documents

- Where requested, all product conformity /certification documents shall be provided for all components, inclusive of Battery charger cabling, wiring, terminal equipment, and installation equipment including earthing and lighting suitable for zone classification.
- Where test certificates have been requested, these shall be submitted.

4.1.1.4.6 Left Over and Recovered Material

- All left over material that formed part of the BoQ shall remain the property of the *Employer* and be left on site.

4.1.1.4.7 Guarantees

- The *Contractor* shall guarantee the equipment to be supplied under this contract against faulty design, materials, and workmanship at the manufacturer's works within the defect liability period (DLP).

5. AUTHORISATION

This document has been seen and accepted by:

Name	Designation
Ernest Sikupela	Real Estate Middle Manager
Phelokazi Nqwelo	Real Estate Middle Manager

6. REVISIONS

Date	Rev.	Compiler	Remarks
22 November 2023	0.1	Shandukani Vhulondo	First draft issued
03 August 2024	0.2	Shandukani Vhulondo	Include Drawings show cable termination, circuit diagrams, depth of meter kiosk, specifying cables connection and wiring on the diagram

7. DEVELOPMENT TEAM

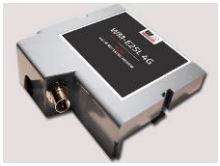
The following people were involved in the development of this document:

Shandukani Vhulondo

8. ACKNOWLEDGEMENTS

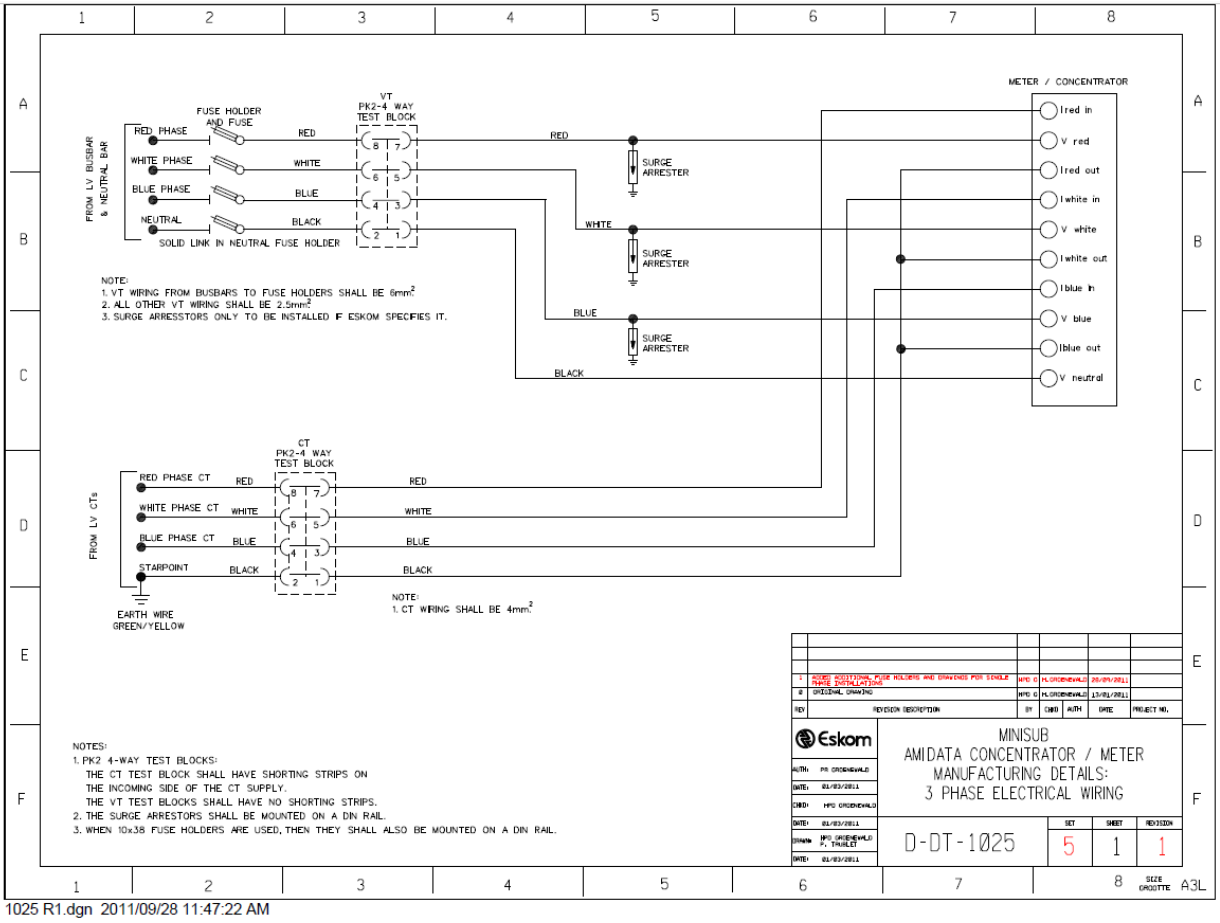
APPENDIX A: TECHNICAL SPECIFICATION OUTPUT DOCUMENTS

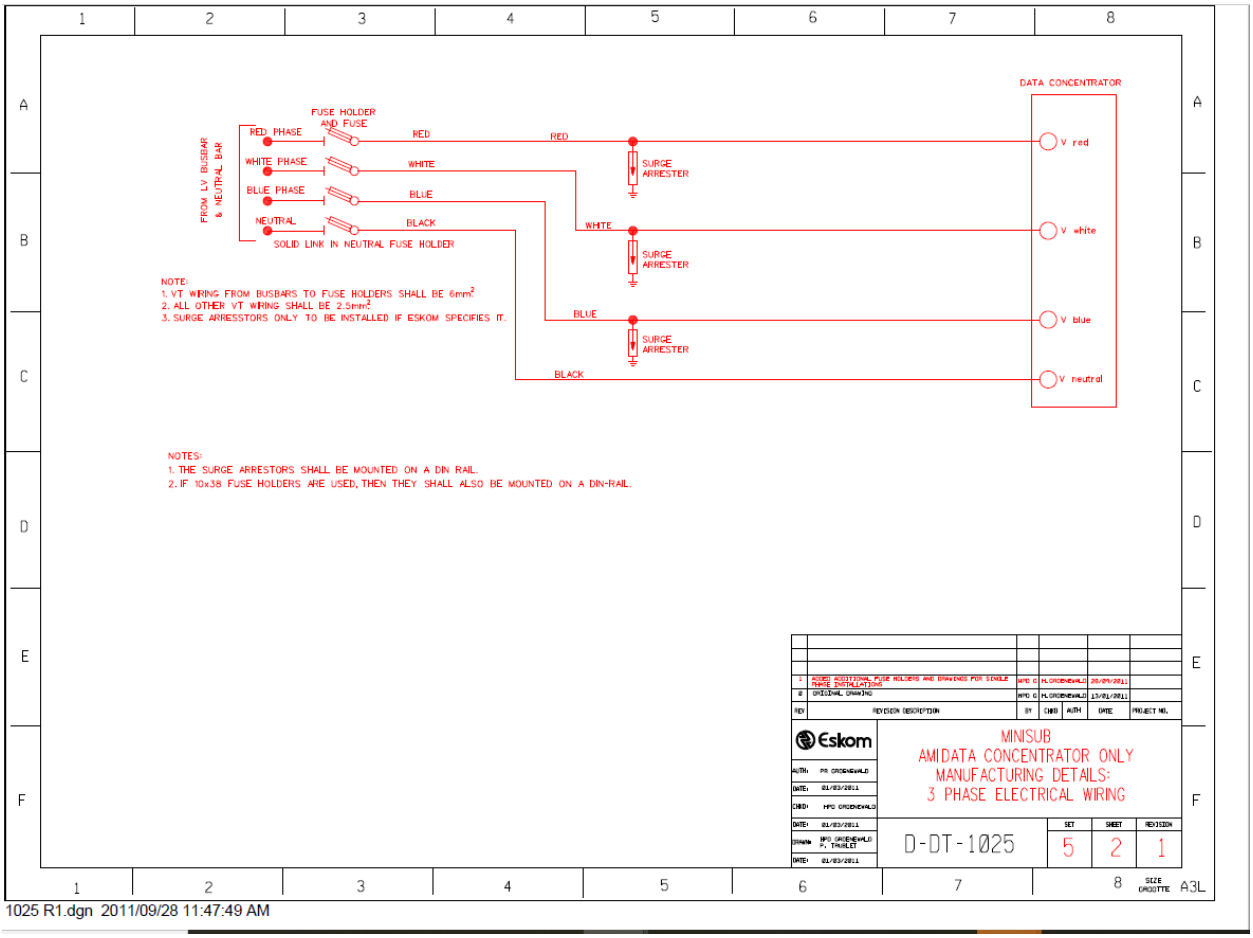
Product Specification and Quantities.

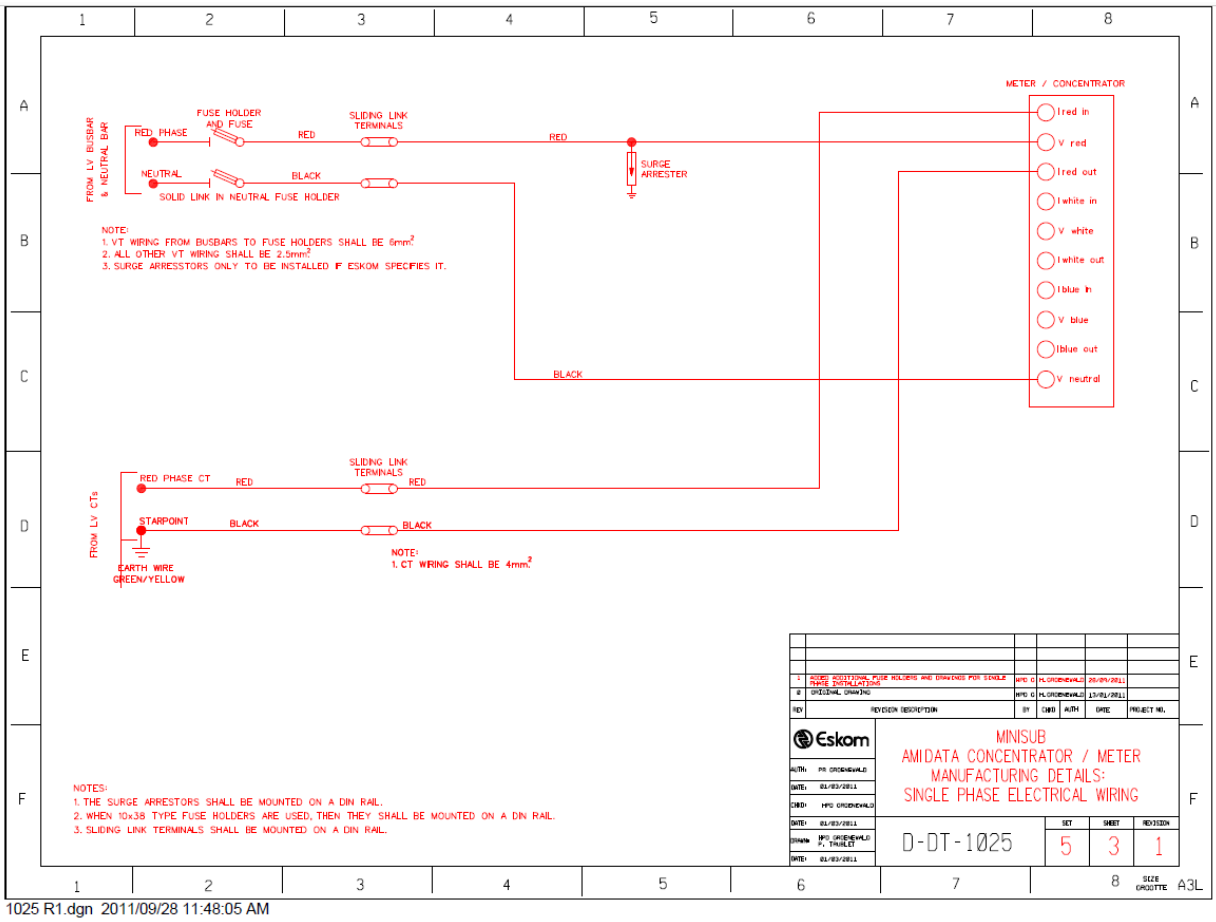
Description	Qty	Type
Gateway/ Data Concentrator (DCU_ + External GSM Modem. 		Smart Meter SAP # 0615099 Three phase programmable 1&5A meter, RS232 + RS485, Cl 0.5: Type: 3ph; Current: 1&5 A; Voltage: 110-400 V, Communication port type: RS232 + RS485; Class: 0.5 for Wh, 1 for varh; Number of outputs: 4 programmable; BS footprint; Calibrated with calibration certificate, calibration sticker affixed to the meter and sealed.
Data Concentrator (DC) 		Gateway/Data Concentrator (DCU) + External FSM Modem Interface: Type PLC DC; Power Source: 230 V; Includes external Landis+Gyr DC 450 modem and standard antennae; Data Concentrator supports communication with E460
Internal GSM Modem 		The Internal modern shall be equipped with 5G network connectivity with capabilities of 4G LTE. IEC 62056-21 protocol, transparent data transmission, remote switch of the meter operation mode and Compatible with Landis+Gyr® E350, E450, E650 electricity meters (ZMG and ZMD family) and DC power supply from the meter. Remote & safe firmware updates. Configurable RS232 + RS485 interface connection
Low Voltage Breaker		Low Voltage Circuit Breakers
PVC Low Voltage cabling		3-ph PVC low voltage cabling (red, white, green) and earthing cable.

SIMMERPAN COMPLEX ENERG

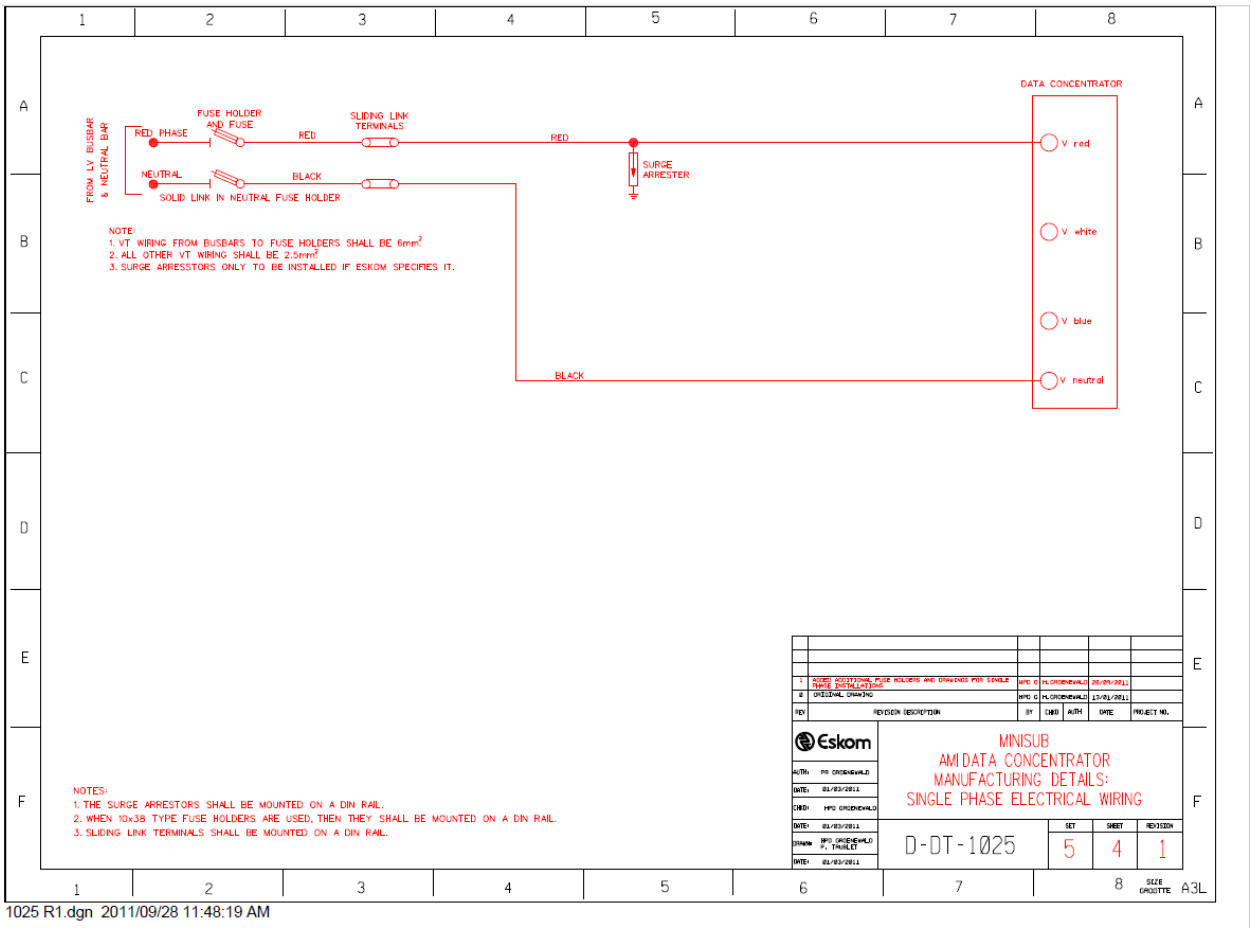
APPENDIX B: SMART METER DATA CONCENTRATOR WIRING




DATA CONCENTRATOR
FUSE HOLDER AND FUSE
FROM LV BUSBAR & NEUTRAL BAR
RED PHASE
WHITE PHASE
BLUE PHASE
NEUTRAL
SOLID LINK IN NEUTRAL FUSE HOLDER
RED
WHITE
BLUE
BLACK
SURGE ARRESTER
V red
V white
V blue
V neutral
NOTE:
1. VT WIRING FROM BUSBARS TO FUSE HOLDERS SHALL BE 6mm²
2. ALL OTHER VT WIRING SHALL BE 2.5mm²
3. SURGE ARRESSTORS ONLY TO BE INSTALLED IF ESKOM SPECIFIES IT.
NOTES:
1. THE SURGE ARRESTORS SHALL BE MOUNTED ON A DIN RAIL.
2. IF 10x38 FUSE HOLDERS ARE USED, THEN THEY SHALL ALSO BE MOUNTED ON A DIN-RAIL.
Eskom
MINISUB
AMIDATA CONCENTRATOR ONLY
MANUFACTURING DETAILS:
3 PHASE ELECTRICAL WIRING
D-DT-1025
SET 5
SHEET 2
REVISION 1
SIZE A3L
1025 R1.dgn 2011/09/28 11:47:49 AM



1025 R1.dgn 2011/09/28 11:48:05 AM


DATA CONCENTRATOR
FUSE HOLDER AND FUSE
SLIDING LINK TERMINALS
FROM LV BUSBAR & NEUTRAL BAR
RED PHASE
RED
RED
NEUTRAL
BLACK
SURGE ARRESTER
SOLID LINK IN NEUTRAL FUSE HOLDER
V red
V white
V blue
V neutral
BLACK
NOTE:
1. VT WIRING FROM BUSBARS TO FUSE HOLDERS SHALL BE 6mm²
2. ALL OTHER VT WIRING SHALL BE 2.5mm²
3. SURGE ARRESTORS ONLY TO BE INSTALLED IF ESKOM SPECIFIES IT.
NOTES:
1. THE SURGE ARRESTORS SHALL BE MOUNTED ON A DIN RAIL.
2. WHEN 10x38 TYPE FUSE HOLDERS ARE USED, THEN THEY SHALL BE MOUNTED ON A DIN RAIL.
3. SLIDING LINK TERMINALS SHALL BE MOUNTED ON A DIN RAIL.
Eskom
MINISUB
AMI DATA CONCENTRATOR
MANUFACTURING DETAILS:
SINGLE PHASE ELECTRICAL WIRING
D-DT-1025
SET 5
SHEET 4
REVISION 1
SIZE A3L
1025 R1.dgn 2011/09/28 11:48:19 AM

EQUIPMENT SPECIFICATION:

LEGEND	DESCRIPTION	APPROVED EQUIPMENT
	PK2 4-WAY TEST BLOCK	IST PK2 4-WAY TEST BLOCK or ALLBRO PK2 4-WAY TEST BLOCK
	TYPE "G" 20 A FUSE HOLDER, 16A HRC FUSE WITH FUSE LINKS WITH OFFSET BLADE CONTACTS OR INDUSTRIAL 1 POLE FUSE HOLDER (10x38) + 32A, 500VAC CLASS gG CYLINDRICAL FUSE	DIMENSIONS TO SANS 60269-2 FUSE SYSTEM TYPE "G" AND SIZE "E1" OR ELECTROMECHANICA: dF TYPE PMF 10x38 OR WOHNER TYPE AES 10x38
	SURGE ARRESTOR: 275V 20/40kA (SINGLE POLE DIN)	CBI: TYPE QKL1-(13)D 275V 20/40kA (CBI BOM CODE QKLD0001)
	SLIDING LINK TERMINAL WITH TEST SOCKETS - 4mm DIA	ENTRELEK TYPE D6/8 ST1 RS or ELMEX TYPE KULTD6 or WEIDMULLER TYPE WTL6 SL

LUG SPECIFICATION:

CONNECTED ONTO:	CONDUCTOR SIZE	LUGS	COLOUR
BUSBAR (VT SUPPLY)	$6mm^2$	HELLERMANN RING TYPE T3R10 or JST TYPE FV5.5-10	YELLOW
FUSE BASE (SUPPLY SIDE)	$6mm^2$	HELLERMANN RING TYPE T3R10 or JST TYPE FV5.5-10	YELLOW
FUSE BASE (LOAD SIDE)	$2.5mm^2$	HELLERMANN RING TYPE T2R6 or JST TYPE FVWS2-6	BLUE
PK2 VT TEST BLOCK	$2,5mm^2$	HELLERMANN RING TYPE T2R6 or JST TYPE FVWS2-6	BLUE
SURGE ARRESTORS	$2,5mm^2$	HELLERMANN DISCONNECT MALE TYPE T2DM or JST TYPE FVDDM2-250	BLUE
CONCENTRATOR VT TERMINALS	$2,5mm^2$	HELLERMANN HOOKED BLADE TYPE T2HB or JST TYPE FVWSAH-2	BLUE
CTS (CT SUPPLY)	$4mm^2$	HELLERMANN RING TYPE T3R10 or JST TYPE FV5.5-10	YELLOW
PK2 CT TEST BLOCK	$4mm^2$	HELLERMANN RING TYPE T3R6 or JST TYPE FV5.5-S6	YELLOW
CONCENTRATOR CT TERMINALS	$4mm^2$	HELLERMANN HOOKED BLADE TYPE T3HB or JST TYPE FVAH-5.5	BLUE

NOTES:
1. LUGS SHALL BE OF THE DOUBLE CRIMP TYPE.
2. LUGS SHALL EACH BE MARKED WITH TYPE AND MANUFACTURER NAME
3. CRIMPING TOOLS USED SHALL BE JST TYPE YNT or CEMBRE TYPE HP4

CONTROL WIRING SPECIFICATION:

DESIGNATION	COLOUR	CONDUCTOR SIZE
RED PHASE VOLTAGE (BUSBAR TO FUSE HOLDER)	RED	$6mm^2$
WHITE PHASE VOLTAGE (BUSBAR TO FUSE HOLDER)	WHITE	$6mm^2$
BLUE PHASE VOLTAGE (BUSBAR TO FUSE HOLDER)	BLUE	$6mm^2$
RED PHASE VOLTAGE (ALL OTHER VT WIRING)	RED	$2,5mm^2$
WHITE PHASE VOLTAGE (ALL OTHER VT WIRING)	WHITE	$2,5mm^2$
BLUE PHASE VOLTAGE (ALL OTHER VT WIRING)	BLUE	$2,5mm^2$
RED PHASE CURRENT	RED	$4mm^2$
WHITE PHASE CURRENT	WHITE	$4mm^2$
BLUE PHASE CURRENT	BLUE	$4mm^2$

REV	REVISION DESCRIPTION	BY	CHKD	AUTH	DATE	PROJECT NO.
1	ADDED ADDITIONAL FUSE HOLDERS AND DRAWINGS FOR SINGLE PHASE INSTALLATIONS	HPD G		H.GROENEWALD	28/09/2011	
0	ORIGINAL DRAWING	HPD G		H.GROENEWALD	13/01/2011	

Eskom

MINISUB
AMIDATA CONCENTRATOR / METER
MANUFACTURING DETAILS:
APPROVED EQUIPMENT

AUTH: PR GROENEWALD
DATE: 01/03/2011
CHKD: HPD GROENEWALD
DATE: 01/03/2011
DRAWN: HPD GROENEWALD P. TRUBLET
DATE: 01/03/2011

D-DT-1025

SET	SHEET	REVISION
5	5	1

SIZE GROOTTE A3L

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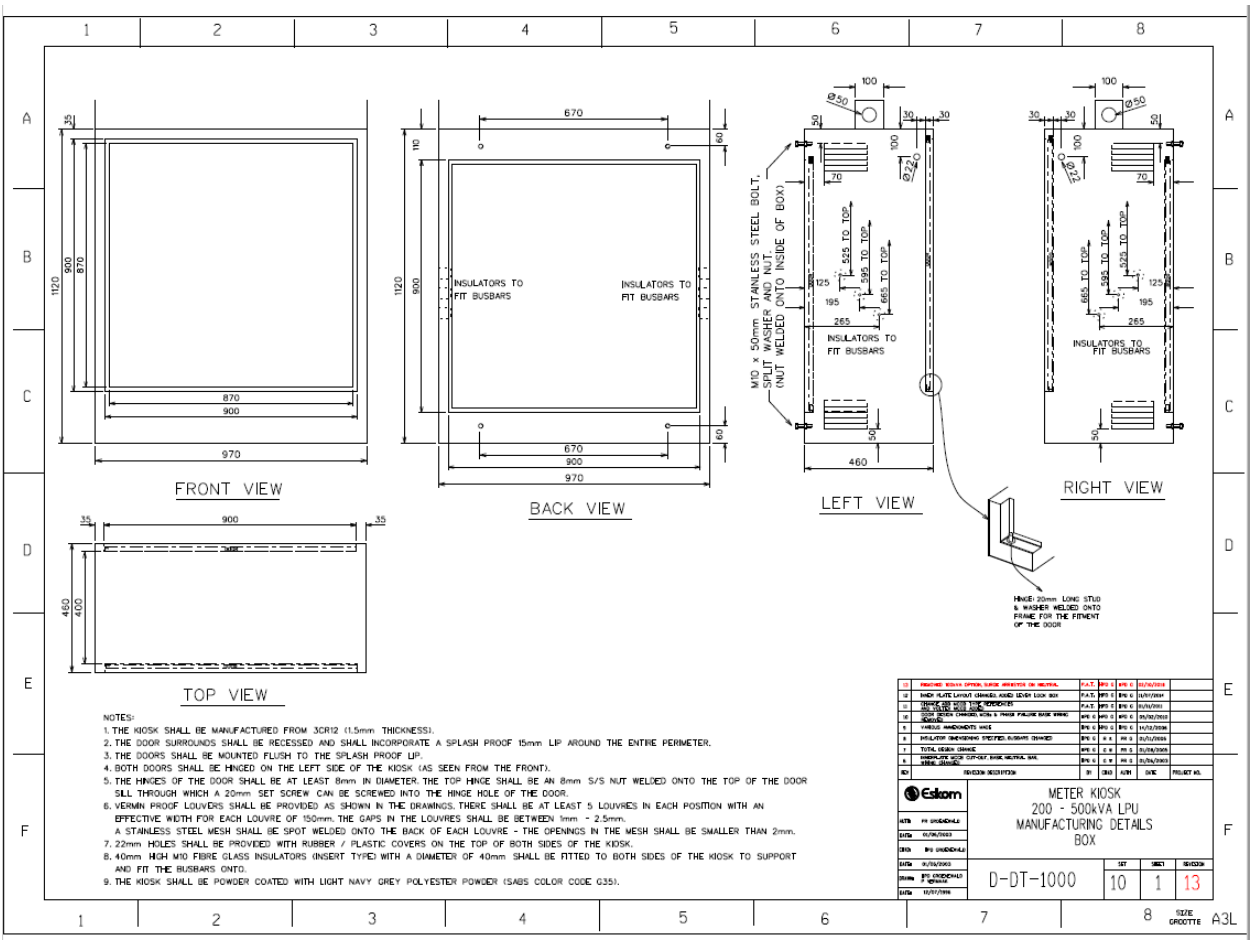
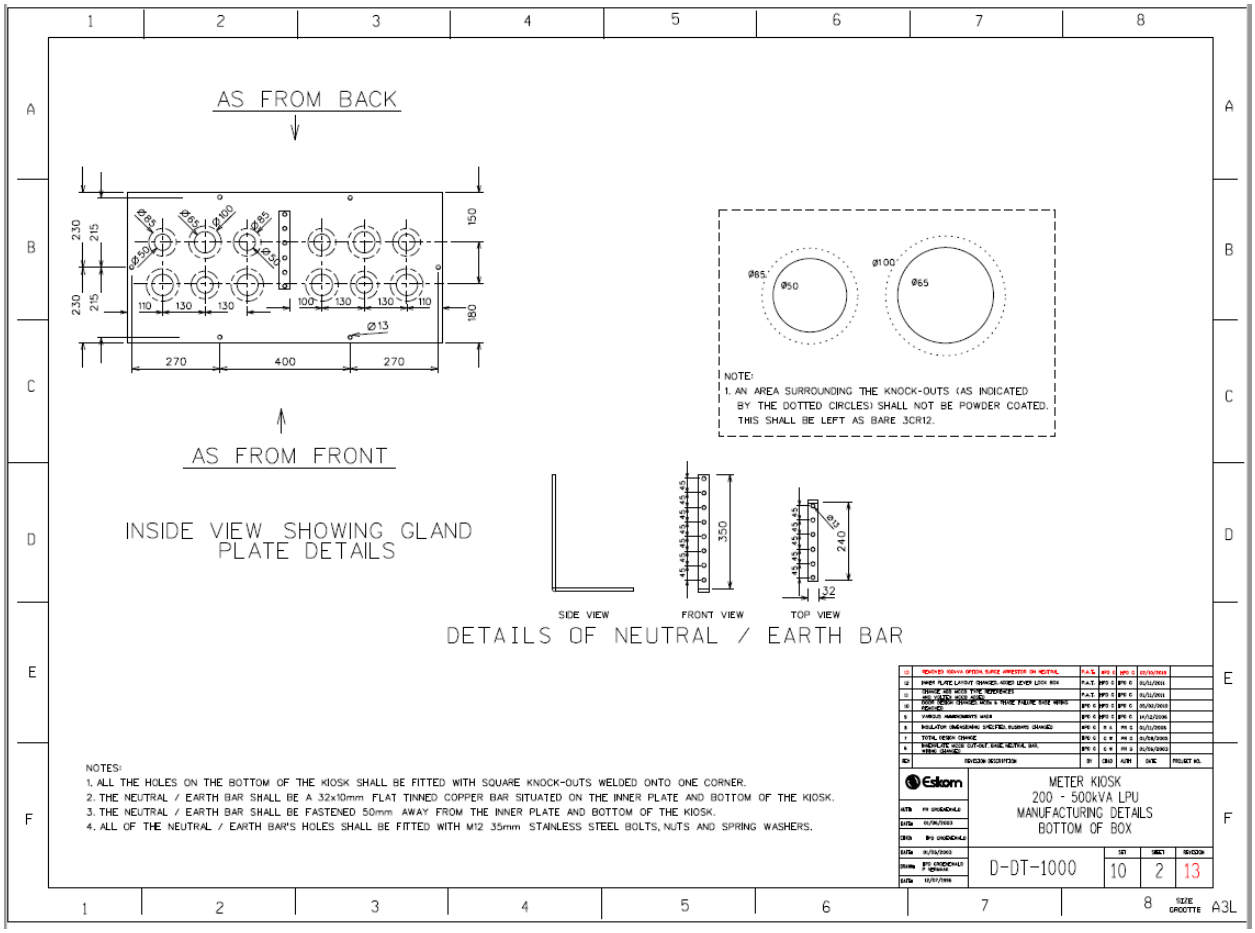
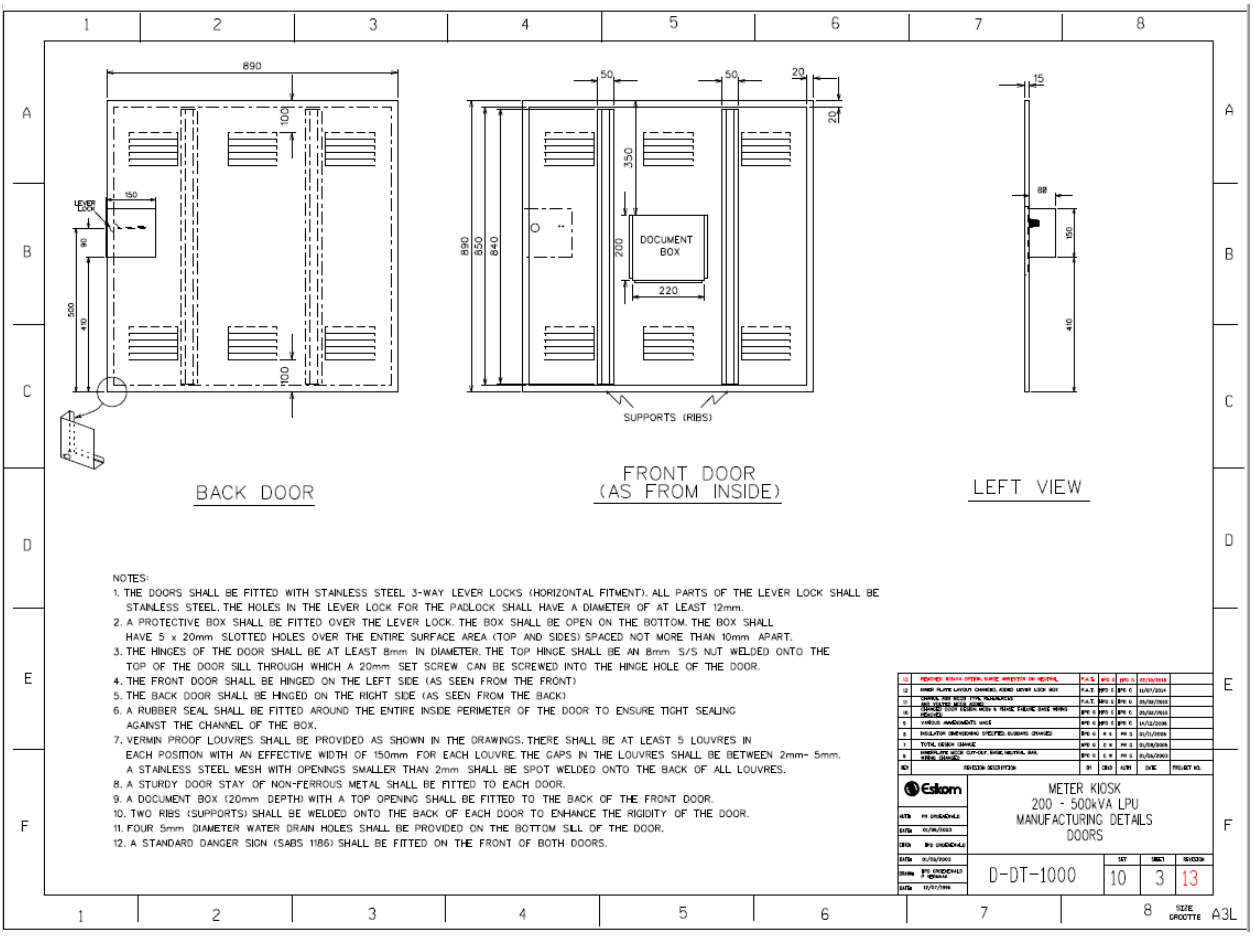
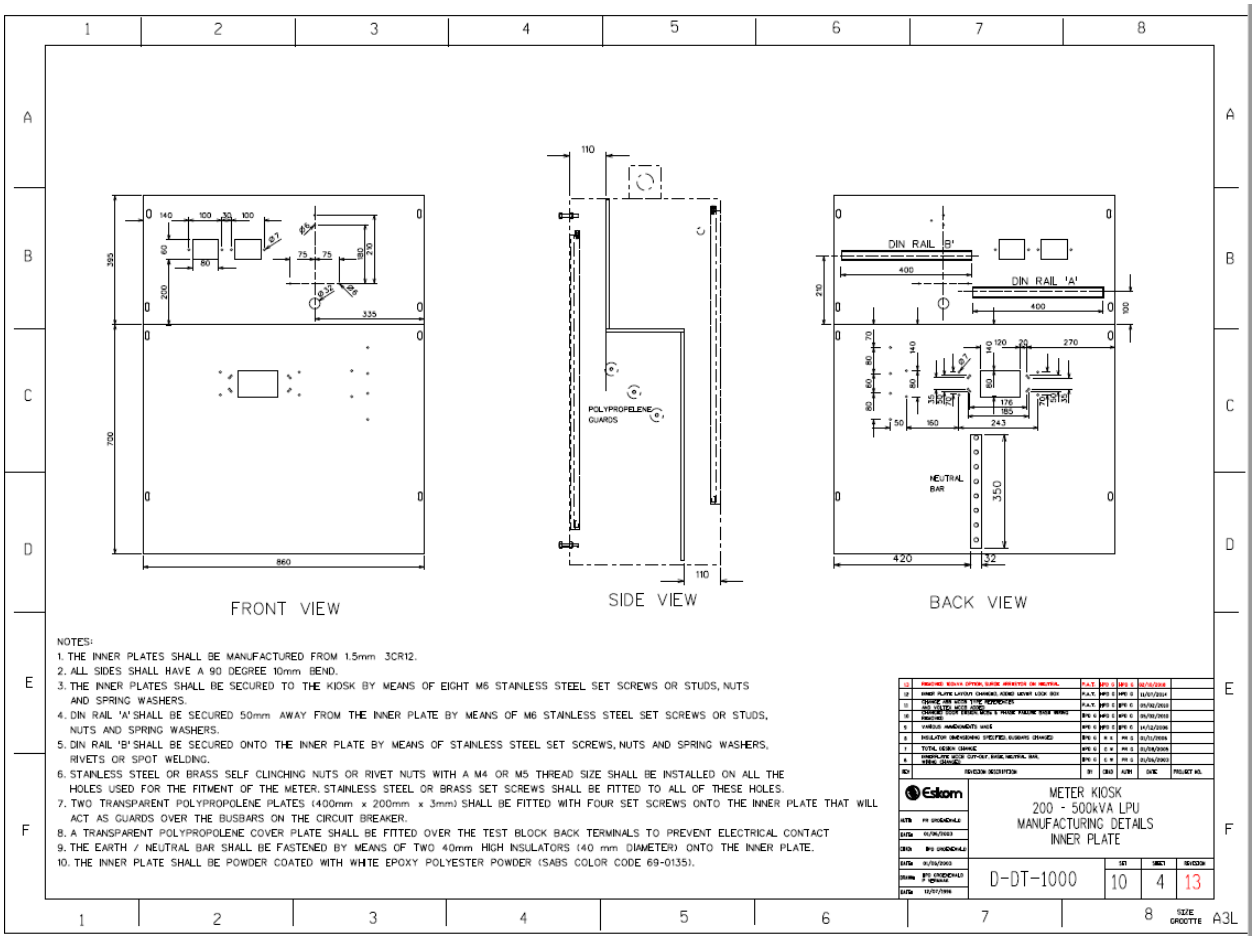
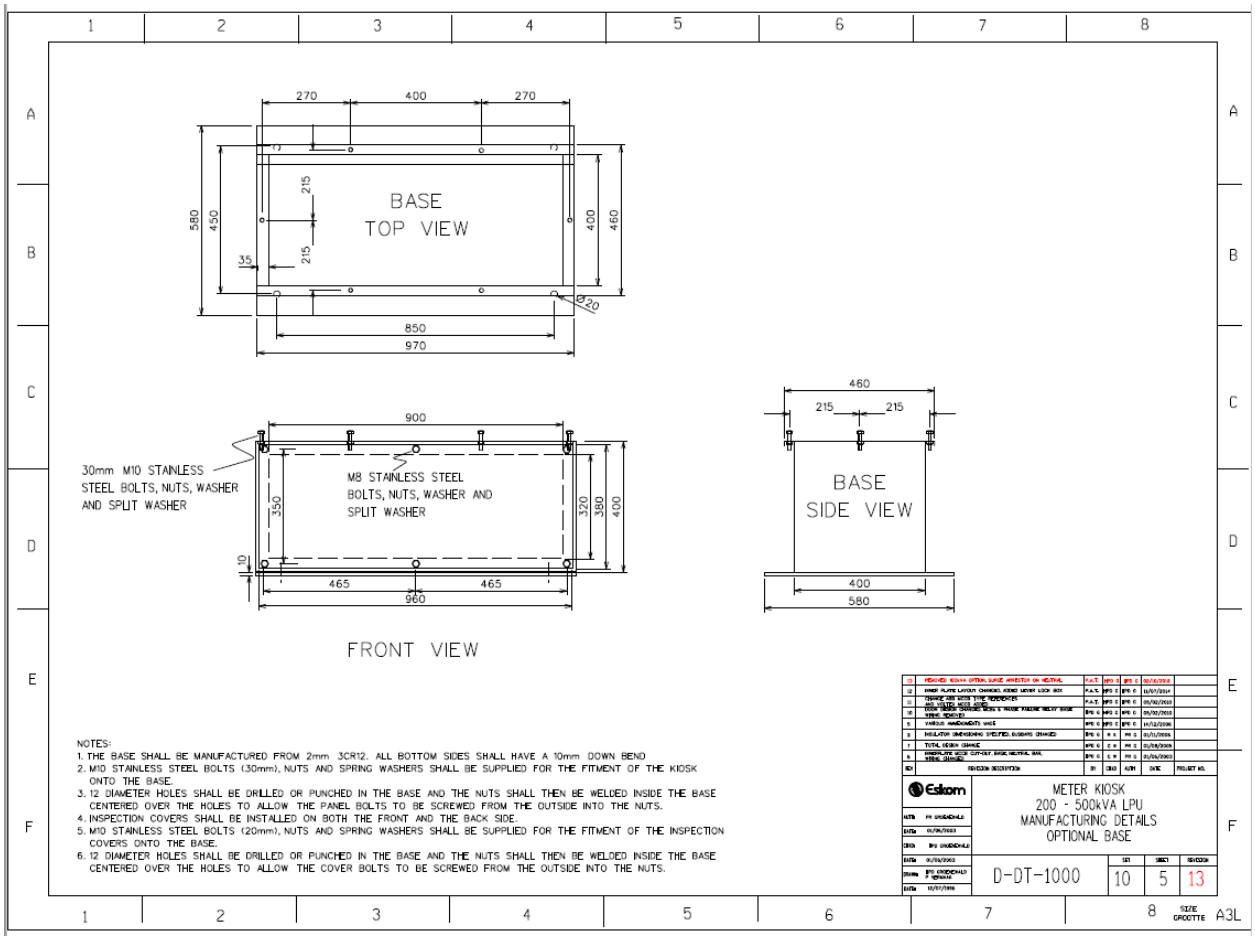
APPENDIX C: METER KIOSK 200 – 500KVA LPU MANUFACTURING DETAIL BOX

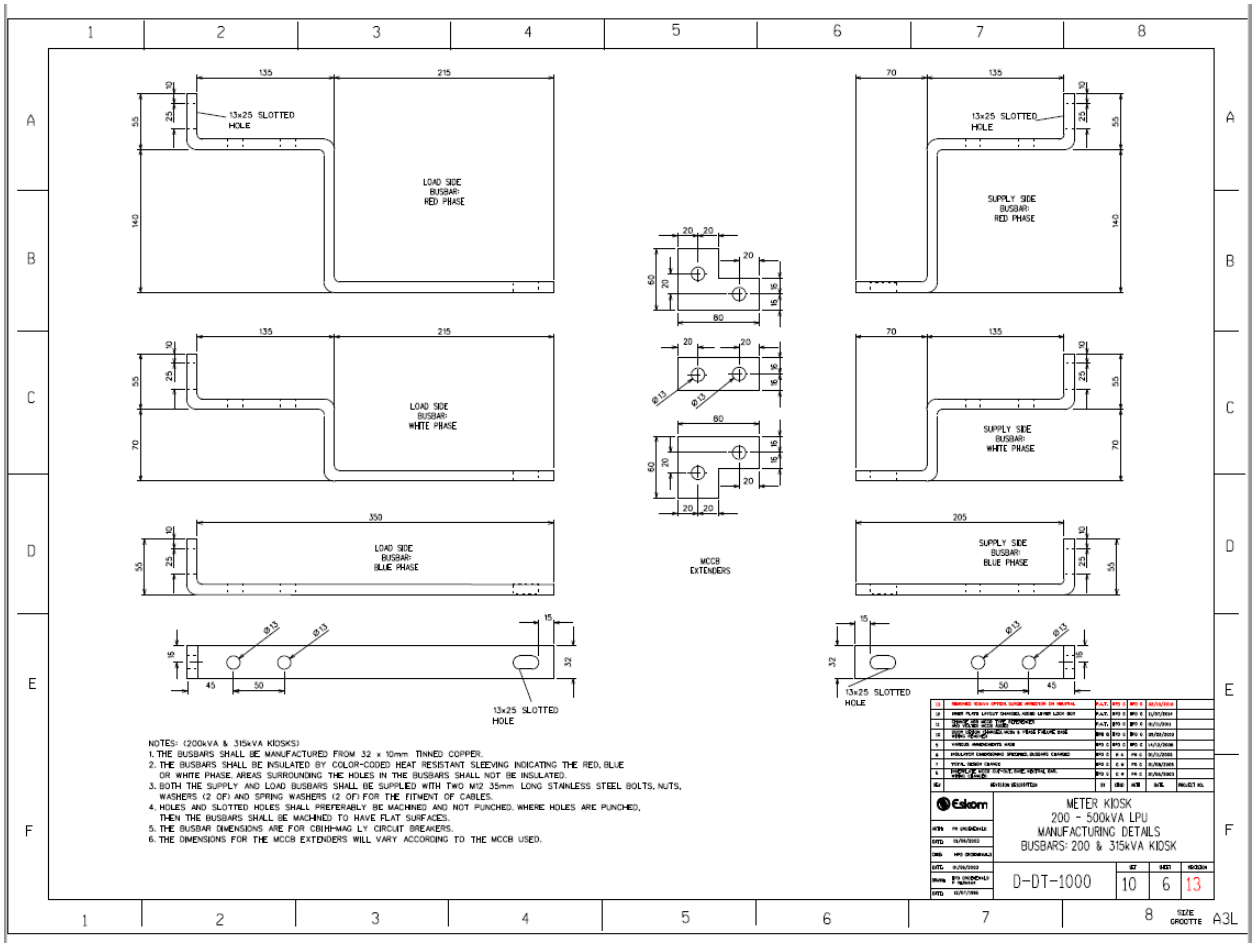


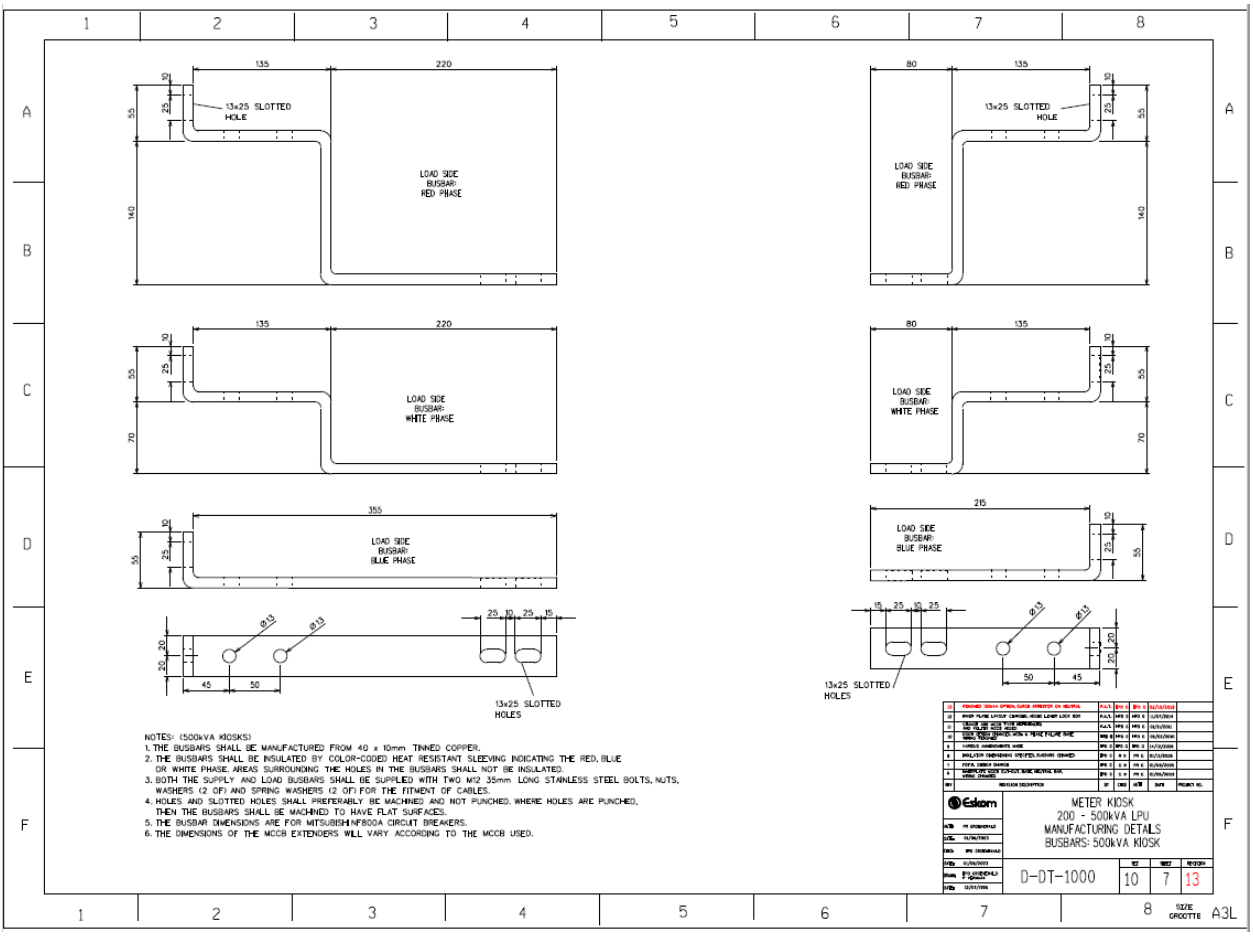

AS FROM BACK
AS FROM FRONT
INSIDE VIEW SHOWING GLAND PLATE DETAILS
NOTE:
1. AN AREA SURROUNDING THE KNOCK-OUTS (AS INDICATED BY THE DOTTED CIRCLES) SHALL NOT BE POWDER COATED. THIS SHALL BE LEFT AS BARE 3CR12.
SIDE VIEW
FRONT VIEW
TOP VIEW
DETAILS OF NEUTRAL / EARTH BAR
NOTES:
1. ALL THE HOLES ON THE BOTTOM OF THE KIOSK SHALL BE FITTED WITH SQUARE KNOCK-OUTS WELDED ONTO ONE CORNER.
2. THE NEUTRAL / EARTH BAR SHALL BE A 32x10mm FLAT TINNED COPPER BAR SITUATED ON THE INNER PLATE AND BOTTOM OF THE KIOSK.
3. THE NEUTRAL / EARTH BAR SHALL BE FASTENED 50mm AWAY FROM THE INNER PLATE AND BOTTOM OF THE KIOSK.
4. ALL OF THE NEUTRAL / EARTH BAR'S HOLES SHALL BE FITTED WITH M12 35mm STAINLESS STEEL BOLTS, NUTS AND SPRING WASHERS.
Eskom
METER KIOSK
200 - 500kVA LPU
MANUFACTURING DETAILS
BOTTOM OF BOX
D-DT-1000
10
2
13
A3L

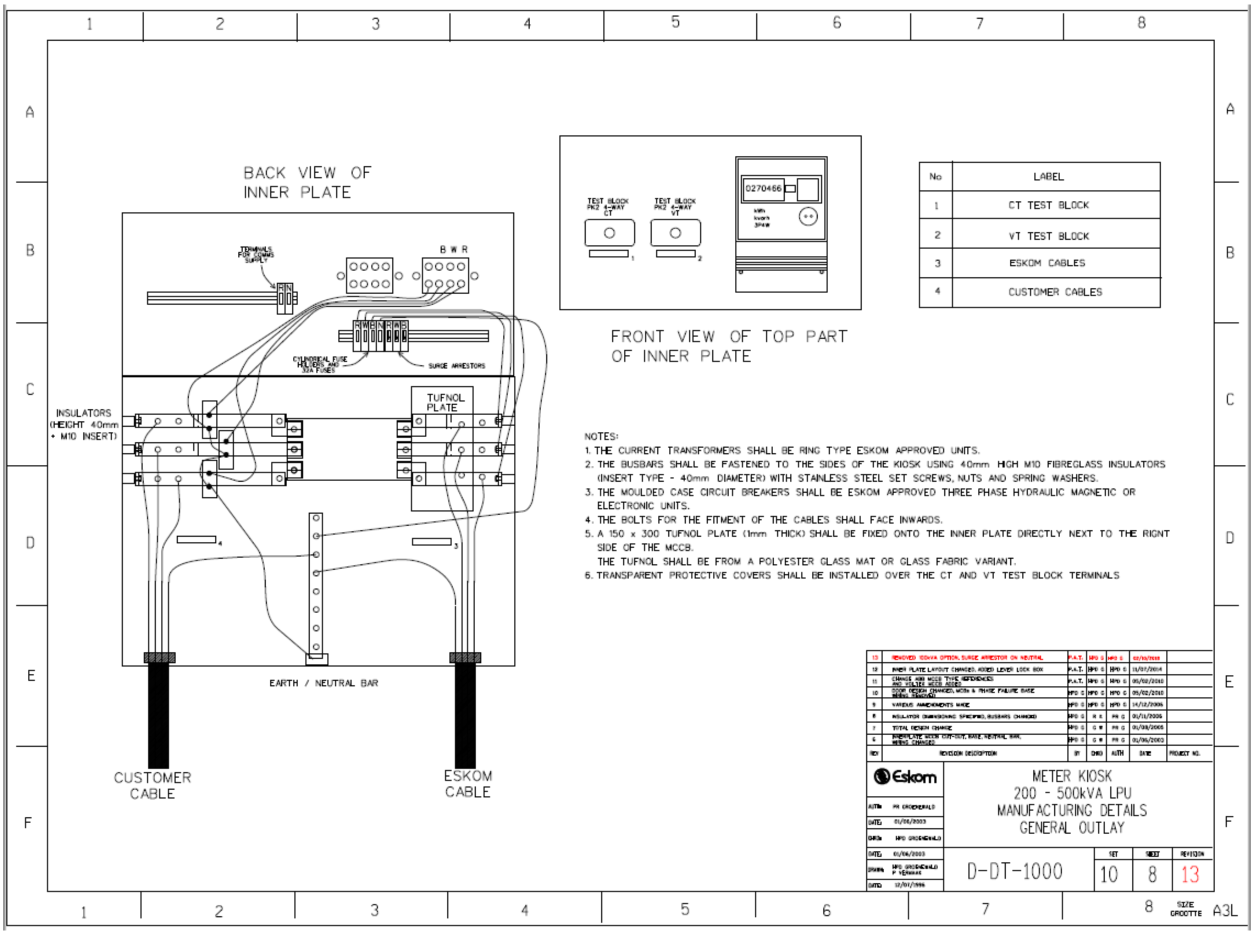

890
100
150
LEVER LOCK
90
500
410
100
BACK DOOR
50
50
20
20
350
890
850
840
200
DOCUMENT BOX
220
SUPPORTS (RIBS)
FRONT DOOR
(AS FROM INSIDE)
15
88
180
410
LEFT VIEW
NOTES:
1. THE DOORS SHALL BE FITTED WITH STAINLESS STEEL 3-WAY LEVER LOCKS (HORIZONTAL FITMENT). ALL PARTS OF THE LEVER LOCK SHALL BE STAINLESS STEEL. THE HOLES IN THE LEVER LOCK FOR THE PADLOCK SHALL HAVE A DIAMETER OF AT LEAST 12mm.
2. A PROTECTIVE BOX SHALL BE FITTED OVER THE LEVER LOCK. THE BOX SHALL BE OPEN ON THE BOTTOM. THE BOX SHALL HAVE 5 x 20mm SLOTTED HOLES OVER THE ENTIRE SURFACE AREA (TOP AND SIDES) SPACED NOT MORE THAN 10mm APART.
3. THE HINGES OF THE DOOR SHALL BE AT LEAST 8mm IN DIAMETER. THE TOP HINGE SHALL BE AN 8mm S/S NUT WELDED ONTO THE TOP OF THE DOOR SILL THROUGH WHICH A 20mm SET SCREW CAN BE SCREWED INTO THE HINGE HOLE OF THE DOOR.
4. THE FRONT DOOR SHALL BE HINGED ON THE LEFT SIDE (AS SEEN FROM THE FRONT)
5. THE BACK DOOR SHALL BE HINGED ON THE RIGHT SIDE (AS SEEN FROM THE BACK)
6. A RUBBER SEAL SHALL BE FITTED AROUND THE ENTIRE INSIDE PERIMETER OF THE DOOR TO ENSURE TIGHT SEALING AGAINST THE CHANNEL OF THE BOX.
7. VERMIN PROOF LOUVRES SHALL BE PROVIDED AS SHOWN IN THE DRAWINGS. THERE SHALL BE AT LEAST 5 LOUVRES IN EACH POSITION WITH AN EFFECTIVE WIDTH OF 150mm FOR EACH LOUVRE. THE GAPS IN THE LOUVRES SHALL BE BETWEEN 2mm- 5mm. A STAINLESS STEEL MESH WITH OPENINGS SMALLER THAN 2mm SHALL BE SPOT WELDED ONTO THE BACK OF ALL LOUVRES.
8. A STURDY DOOR STAY OF NON-FERROUS METAL SHALL BE FITTED TO EACH DOOR.
9. A DOCUMENT BOX (20mm DEPTH) WITH A TOP OPENING SHALL BE FITTED TO THE BACK OF THE FRONT DOOR.
10. TWO RIBS (SUPPORTS) SHALL BE WELDED ONTO THE BACK OF EACH DOOR TO ENHANCE THE RIGIDITY OF THE DOOR.
11. FOUR 5mm DIAMETER WATER DRAIN HOLES SHALL BE PROVIDED ON THE BOTTOM SILL OF THE DOOR.
12. A STANDARD DANGER SIGN (SABS 1186) SHALL BE FITTED ON THE FRONT OF BOTH DOORS.
Eskom
METER KIOSK
200 - 500kVA LPU
MANUFACTURING DETAILS
DOORS
D-DT-1000
SET 10
SHEET 3
REVISION 13
SIZE/E GROOTTE A3L

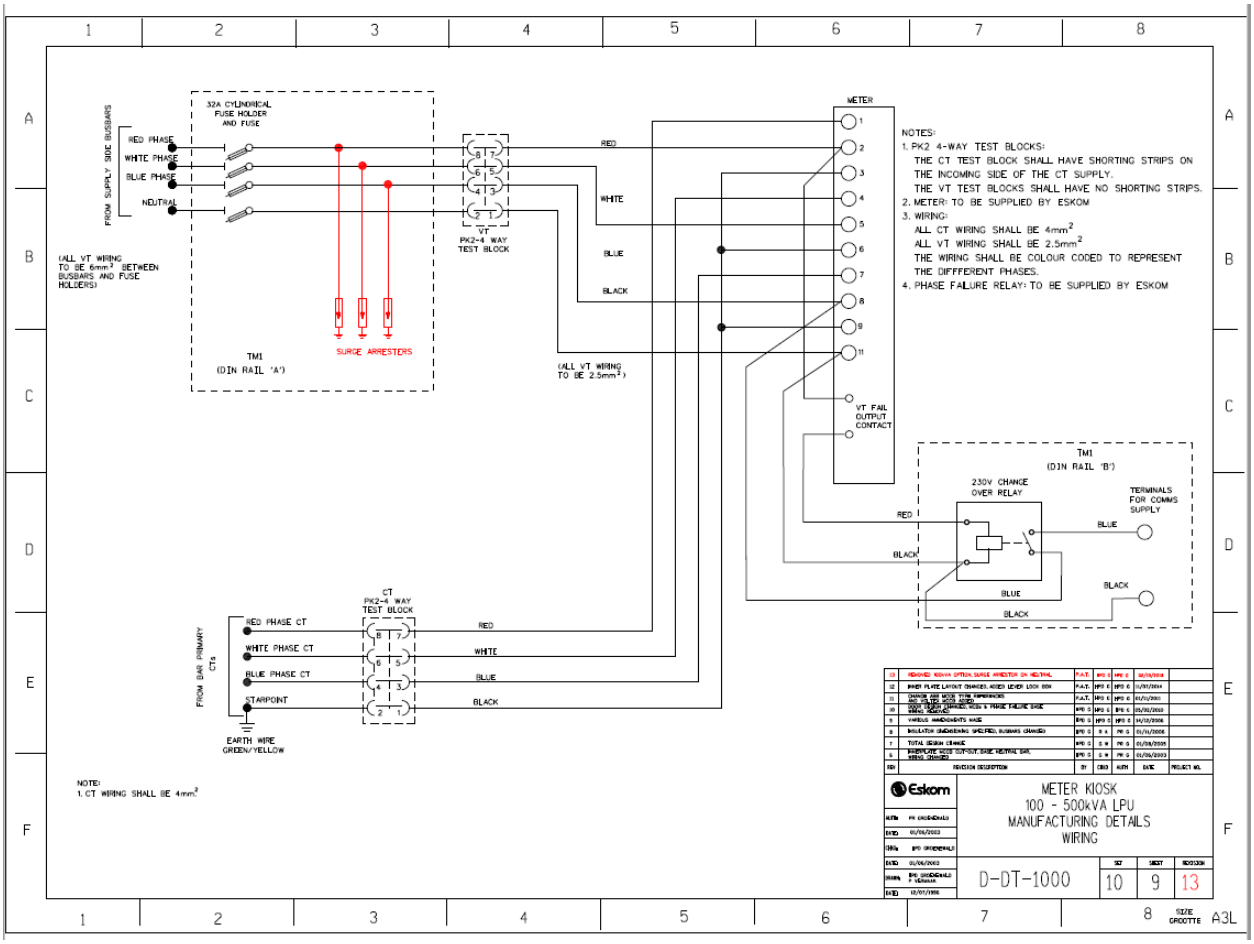

FRONT VIEW
SIDE VIEW
BACK VIEW
DIN RAIL 'B'
DIN RAIL 'A'
POLYPROPELENE GUARDS
NEUTRAL BAR
NOTES:
1. THE INNER PLATES SHALL BE MANUFACTURED FROM 1.5mm 3CR12.
2. ALL SIDES SHALL HAVE A 90 DEGREE 10mm BEND.
3. THE INNER PLATES SHALL BE SECURED TO THE KIOSK BY MEANS OF EIGHT M6 STAINLESS STEEL SET SCREWS OR STUDS, NUTS AND SPRING WASHERS.
4. DIN RAIL 'A' SHALL BE SECURED 50mm AWAY FROM THE INNER PLATE BY MEANS OF M6 STAINLESS STEEL SET SCREWS OR STUDS, NUTS AND SPRING WASHERS.
5. DIN RAIL 'B' SHALL BE SECURED ONTO THE INNER PLATE BY MEANS OF STAINLESS STEEL SET SCREWS, NUTS AND SPRING WASHERS, RIVETS OR SPOT WELDING.
6. STAINLESS STEEL OR BRASS SELF CLINCHING NUTS OR RIVET NUTS WITH A M4 OR M5 THREAD SIZE SHALL BE INSTALLED ON ALL THE HOLES USED FOR THE FITMENT OF THE METER. STAINLESS STEEL OR BRASS SET SCREWS SHALL BE FITTED TO ALL OF THESE HOLES.
7. TWO TRANSPARENT POLYPROPOLENE PLATES (400mm x 200mm x 3mm) SHALL BE FITTED WITH FOUR SET SCREWS ONTO THE INNER PLATE THAT WILL ACT AS GUARDS OVER THE BUSBARS ON THE CIRCUIT BREAKER.
8. A TRANSPARENT POLYPROPOLENE COVER PLATE SHALL BE FITTED OVER THE TEST BLOCK BACK TERMINALS TO PREVENT ELECTRICAL CONTACT
9. THE EARTH / NEUTRAL BAR SHALL BE FASTENED BY MEANS OF TWO 40mm HIGH INSULATORS (40 mm DIAMETER) ONTO THE INNER PLATE.
10. THE INNER PLATE SHALL BE POWDER COATED WITH WHITE EPOXY POLYESTER POWDER (SABS COLOR CODE 69-0135).
Eskom
METER KIOSK
200 - 500kVA LPU
MANUFACTURING DETAILS
INNER PLATE
D-DT-1000
10
4
13
A3L


BASE
TOP VIEW
270
400
270
580
450
460
400
215
215
35
Ø20
850
970
30mm M10 STAINLESS
STEEL BOLTS, NUTS, WASHER
AND SPLIT WASHER
M8 STAINLESS STEEL
BOLTS, NUTS, WASHER AND
SPLIT WASHER
900
350
320
380
400
19
465
465
960
FRONT VIEW
460
215
215
BASE
SIDE VIEW
400
580
NOTES:
1. THE BASE SHALL BE MANUFACTURED FROM 2mm 3CR12. ALL BOTTOM SIDES SHALL HAVE A 10mm DOWN BEND
2. M10 STAINLESS STEEL BOLTS (30mm), NUTS AND SPRING WASHERS SHALL BE SUPPLIED FOR THE FITMENT OF THE KIOSK ONTO THE BASE.
3. 12 DIAMETER HOLES SHALL BE DRILLED OR PUNCHED IN THE BASE AND THE NUTS SHALL THEN BE WELDED INSIDE THE BASE CENTERED OVER THE HOLES TO ALLOW THE PANEL BOLTS TO BE SCREWED FROM THE OUTSIDE INTO THE NUTS.
4. INSPECTION COVERS SHALL BE INSTALLED ON BOTH THE FRONT AND THE BACK SIDE.
5. M10 STAINLESS STEEL BOLTS (20mm), NUTS AND SPRING WASHERS SHALL BE SUPPLIED FOR THE FITMENT OF THE INSPECTION COVERS ONTO THE BASE.
6. 12 DIAMETER HOLES SHALL BE DRILLED OR PUNCHED IN THE BASE AND THE NUTS SHALL THEN BE WELDED INSIDE THE BASE CENTERED OVER THE HOLES TO ALLOW THE COVER BOLTS TO BE SCREWED FROM THE OUTSIDE INTO THE NUTS.
Eskom
METER KIOSK
200 - 500kVA LPU
MANUFACTURING DETAILS
OPTIONAL BASE
D-DT-1000
10
5
13
A3L


13x25 SLOTTED HOLE
LOAD SIDE BUSBAR: RED PHASE
LOAD SIDE BUSBAR: WHITE PHASE
LOAD SIDE BUSBAR: BLUE PHASE
SUPPLY SIDE BUSBAR: RED PHASE
SUPPLY SIDE BUSBAR: WHITE PHASE
SUPPLY SIDE BUSBAR: BLUE PHASE
MCCB EXTENDERS
NOTES: (200kVA & 315kVA KIOSKS)
1. THE BUSBARS SHALL BE MANUFACTURED FROM 32 x 10mm TINNED COPPER.
2. THE BUSBARS SHALL BE INSULATED BY COLOR-CODED HEAT RESISTANT SLEEVING INDICATING THE RED, BLUE OR WHITE PHASE. AREAS SURROUNDING THE HOLES IN THE BUSBARS SHALL NOT BE INSULATED.
3. BOTH THE SUPPLY AND LOAD BUSBARS SHALL BE SUPPLIED WITH TWO M12 35mm LONG STAINLESS STEEL BOLTS, NUTS, WASHERS (2 OFF) AND SPRING WASHERS (2 OFF) FOR THE FITMENT OF CABLES.
4. HOLES AND SLOTTED HOLES SHALL PREFERABLY BE MACHINED AND NOT PUNCHED. WHERE HOLES ARE PUNCHED, THEN THE BUSBARS SHALL BE MACHINED TO HAVE FLAT SURFACES.
5. THE BUSBAR DIMENSIONS ARE FOR CBI/H-MAG LY CIRCUIT BREAKERS.
6. THE DIMENSIONS FOR THE MCCB EXTENDERS WILL VARY ACCORDING TO THE MCCB USED.
Eskom
METER KIOSK
200 - 500kVA LPU
MANUFACTURING DETAILS
BUSBARS: 200 & 315kVA KIOSK
D-DT-1000
10
6
13
SIZE GROOTTE A3L


13x25 SLOTTED HOLE
LOAD SIDE BUSBAR: RED PHASE
LOAD SIDE BUSBAR: WHITE PHASE
LOAD SIDE BUSBAR: BLUE PHASE
13x25 SLOTTED HOLES
NOTES: (500kVA KIOSKS)
1. THE BUSBARS SHALL BE MANUFACTURED FROM 40 x 10mm TINNED COPPER.
2. THE BUSBARS SHALL BE INSULATED BY COLOR-CODED HEAT RESISTANT SLEEVING INDICATING THE RED, BLUE OR WHITE PHASE. AREAS SURROUNDING THE HOLES IN THE BUSBARS SHALL NOT BE INSULATED.
3. BOTH THE SUPPLY AND LOAD BUSBARS SHALL BE SUPPLIED WITH TWO M12 35mm LONG STAINLESS STEEL BOLTS, NUTS, WASHERS (2 OF) AND SPRING WASHERS (2 OF) FOR THE FITMENT OF CABLES.
4. HOLES AND SLOTTED HOLES SHALL PREFERABLY BE MACHINED AND NOT PUNCHED. WHERE HOLES ARE PUNCHED, THEN THE BUSBARS SHALL BE MACHINED TO HAVE FLAT SURFACES.
5. THE BUSBAR DIMENSIONS ARE FOR MITSUBISHI NF800A CIRCUIT BREAKERS.
6. THE DIMENSIONS OF THE MCCB EXTENDERS WILL VARY ACCORDING TO THE MCCB USED.
Eskom
METER KIOSK
200 - 500kVA LPU
MANUFACTURING DETAILS
BUSBARS: 500kVA KIOSK
D-DT-1000
10
7
13
SIZE GROOTTE A3L


BACK VIEW OF
INNER PLATE
B W R
INSULATORS
(HEIGHT 40mm
+ M10 INSERT)
TUFNOL
PLATE
EARTH / NEUTRAL BAR
CUSTOMER
CABLE
ESKOM
CABLE
FRONT VIEW OF TOP PART
OF INNER PLATE
No
LABEL
1
CT TEST BLOCK
2
VT TEST BLOCK
3
ESKOM CABLES
4
CUSTOMER CABLES
NOTES:
1. THE CURRENT TRANSFORMERS SHALL BE RING TYPE ESKOM APPROVED UNITS.
2. THE BUSBARS SHALL BE FASTENED TO THE SIDES OF THE KIOSK USING 40mm HIGH M10 FIBREGLASS INSULATORS (INSERT TYPE - 40mm DIAMETER) WITH STAINLESS STEEL SET SCREWS, NUTS AND SPRING WASHERS.
3. THE MOULDED CASE CIRCUIT BREAKERS SHALL BE ESKOM APPROVED THREE PHASE HYDRAULIC MAGNETIC OR ELECTRONIC UNITS.
4. THE BOLTS FOR THE FITMENT OF THE CABLES SHALL FACE INWARDS.
5. A 150 x 300 TUFNOL PLATE (1mm THICK) SHALL BE FIXED ONTO THE INNER PLATE DIRECTLY NEXT TO THE RIGNT SIDE OF THE MCCB.
THE TUFNOL SHALL BE FROM A POLYESTER GLASS MAT OR GLASS FABRIC VARIANT.
6. TRANSPARENT PROTECTIVE COVERS SHALL BE INSTALLED OVER THE CT AND VT TEST BLOCK TERMINALS
Eskom
METER KIOSK
200 - 500kVA LPU
MANUFACTURING DETAILS
GENERAL OUTLAY
D-DT-1000
10
8
13
SIZE
GROOTTE
A3L


32A CYLINDRICAL FUSE HOLDER AND FUSE
FROM SUPPLY SIDE BUSBARS
RED PHASE
WHITE PHASE
BLUE PHASE
NEUTRAL
(ALL VT WIRING TO BE 6mm² BETWEEN BUSBARS AND FUSE HOLDERS)
TM1
(DIN RAIL 'A')
SURGE ARRESTERS
VT
PK2-4 WAY TEST BLOCK
RED
WHITE
BLUE
BLACK
(ALL VT WIRING TO BE 2.5mm²)
METER
NOTES:
1. PK2 4-WAY TEST BLOCKS:
THE CT TEST BLOCK SHALL HAVE SHORTING STRIPS ON THE INCOMING SIDE OF THE CT SUPPLY.
THE VT TEST BLOCKS SHALL HAVE NO SHORTING STRIPS.
2. METER: TO BE SUPPLIED BY ESKOM
3. WIRING:
ALL CT WIRING SHALL BE 4mm²
ALL VT WIRING SHALL BE 2.5mm²
THE WIRING SHALL BE COLOUR CODED TO REPRESENT THE DIFFFERENT PHASES.
4. PHASE FAILURE RELAY: TO BE SUPPLIED BY ESKOM
VT FAIL OUTPUT CONTACT
TM1
(DIN RAIL 'B')
230V CHANGE OVER RELAY
TERMINALS FOR COMMS SUPPLY
RED
BLACK
BLUE
BLACK
BLUE
BLACK
CT
PK2-4 WAY TEST BLOCK
FROM BAR PRIMARY CTs
RED PHASE CT
WHITE PHASE CT
BLUE PHASE CT
STARPOINT
EARTH WIRE GREEN/YELLOW
RED
WHITE
BLUE
BLACK
NOTE:
1. CT WIRING SHALL BE 4mm²
Eskom
METER KIOSK
100 - 500kVA LPU
MANUFACTURING DETAILS
WIRING
D-DT-1000
10
9
13
SIZE A3L

STANDARD INSTALLATION DATA:		
SUPPLY SIZE	MCCB SIZE	CT RATIO
100kVA	150A	200/5
200kVA	300A	300/5
315kVA	450A	500/5
500kVA	800A	800/5

CONTROL WIRING SPECIFICATION:		
DESIGNATION	COLOUR	CONDUCTOR SIZE
RED PHASE VOLTAGE (BUSBAR TO FUSE HOLDER)	RED	6mm²
WHITE PHASE VOLTAGE (BUSBAR TO FUSE HOLDER)	WHITE	6mm²
BLUE PHASE VOLTAGE (BUSBAR TO FUSE HOLDER)	BLUE	6mm²
RED PHASE VOLTAGE (ALL OTHER VT WIRING)	RED	2,5mm²
WHITE PHASE VOLTAGE (ALL OTHER VT WIRING)	WHITE	2,5mm²
BLUE PHASE VOLTAGE (ALL OTHER VT WIRING)	BLUE	2,5mm²
RED PHASE CURRENT	RED	4mm²
WHITE PHASE CURRENT	WHITE	4mm²
BLUE PHASE CURRENT	BLUE	4mm²

LUG SPECIFICATION:			
CONNECTED ONTO:	CONDUCTOR SIZE	LUGS	COLOUR
BUSBAR	6mm²	HELLERMANN RING TYPE T3R10 or JST TYPE FV5.5-10	YELLOW
FUSE BASE (TOP)	6mm²	HELLERMANN DISCONNECT MALE TYPE T3DM or JST TYPE FVDDM5.5-250	YELLOW
FUSE BASE (BOTTOM)	2.5mm²	HELLERMANN DISCONNECT MALE TYPE T2DM or JST TYPE FVDDM2-250	BLUE
PK2 VT TEST BLOCK	2,5mm²	HELLERMANN RING TYPE T2R6 or JST TYPE FVWS2-6	BLUE
SURGE ARRESTORS	2,5mm²	HELLERMANN DISCONNECT MALE TYPE T2DM or JST TYPE FVDDM2-250	BLUE
TERMINALS 10mm	2,5mm²	HELLERMANN HOOKED BLADE TYPE T2H8 or JST TYPE FVWSAH-2	BLUE
RELAY BASE	2,5mm²	HELLERMANN BLADE TYPE T2FB9 or PIN TYPE 2P8 or JST BLADE TYPE FVWS2-1AF or PIN TYPE FVWSPC-2	BLUE
PK2 CT TEST BLOCK	4mm²	HELLERMANN RING TYPE T3R6 or JST TYPE FV5.5-S6	YELLOW

NOTES:
1. LUGS SHALL BE OF THE DOUBLE CRIMP TYPE.
2. LUGS SHALL EACH BE MARKED WITH TYPE AND MANUFACTURER NAME

EQUIPMENT SPECIFICATION:		
LEGEND	DESCRIPTION	APPROVED EQUIPMENT
	THREE PHASE 230V, 5A, PROGRAMMABLE METER CALLIBRATED, SEALED AND WITH TESTED STICKER	ELSTER A1700 or A1140 5A, CL 0.5 METER or LANDIS & GYR ZMD or ZMG 5A, CL 0.5 METER
	HYDRAULIC MAGNETIC OR ELECTRONIC THREE PHASE BREAKER, >20kA (MCCB) 300A	CBI ELECTRIC: HY-MAG TYPE L20B 300A or CBI ELECTRIC: MITSUBISHI NF400SEW 200-400A or ABB TYPE T4N 320 R320 or SCHNEIDER ELECTRIC: MERLIN GERIN CODE 32893 OR VOLTEX CODE GBN403E & ABS403E
	HYDRAULIC MAGNETIC OR ELECTRONIC THREE PHASE BREAKER, >20kA (MCCB) 450A	CBI ELECTRIC: HY-MAG TYPE L20B 450A or CBI ELECTRIC: MITSUBISHI NF630SEW 300-630A or ABB TYPE T5N 630 R630 252-630A or SCHNEIDER ELECTRIC: MERLIN GERIN CODE 32899 OR VOLTEX CODE GBN403E & ABS403E
	HYDRAULIC MAGNETIC OR ELECTRONIC THREE PHASE BREAKER, >20kA (MCCB) 800A	CBI ELECTRIC: HY-MAG TYPE M25B 830A or CBI ELECTRIC: MITSUBISHI NF800SEW 400-800A or ABB TYPE S6N 800 R8000 or SCHNEIDER ELECTRIC: MERLIN GERIN CODE 33466 OR VOLTEX CODE GBN803E & ABS803E
	CURRENT TRANSFORMERS: RING TYPE CLASS 0.5 5VA	ITT: 200/5A, 300/5A, 500/5A & 800/5A or CURRENT ELECTRIC: 200/5A, 300/5A, 500/5A & 800/5A
	PK2 4-WAY TEST BLOCK	IST PK2 4-WAY TEST BLOCK or ALLBRO PK2 4-WAY TEST BLOCK
	FUSE BASE (SEALABLE) 10x38 FUSE - 32A, 500VAC, CLASS aM	ELECTRO MECHANICA: df TYPE PMF 10x38 or WOHNER TYPE AES 10x38 INDUSTRIAL 1 POLE FUSE HOLDER + 32A CLASS aM CYLINDRICAL FUSE
	SURGE ARRESTOR: Imax (8/20ms) 40kA or 65kA (4/20ms) 275V (SINGLE POLE DIN) SANS IEC 61643-1	CBI: TYPE QKL1-(13)0 275V 20/40kA (CBI BOM CODE QKL00001) or SIMILAR
	TERMINALS FOR COMMS SUPPLY	WEIDMULLER TYPE WDU 10 SL or ENTRELEC TYPE M 10/10.RS or ALSTOM: ELMEX TYPE KULT1
	MINIATURE RELAY AND DIN BASE 230V 10A 1 CHANGEOVER	FINDER TYPE 40.51 RELAY & TYPE 95.05 BASE or SIMILAR

Eskom

METER KIOSK
200 - 500kVA LPU
MANUFACTURING DETAILS
APPROVED EQUIPMENT

D-DT-1000 | SIZE A3L | SHEET 10 | 10 | REVISION 13

APPENDIX D: SIMMERPAN BUILDING OCCUPANCE

Table below is the list of all Simmerpan Buildings that requires Energy Performance Certificate.

ERE Commercial office Building_Name	Building Occupancy Classification (see note)	Name of Owner	Energy Carriers used (see note)	Has the building undergone any major renovation in last 2 years? - Yes/ (see note)	Total Nett Floor Area (m^2) (see note)	Year of Construction	Date EPC is required by?
SIMMERPAN COMPLEX: SWITCHGEAR BUILDING	G1	Eskom Owned	Eskom	NO	2 836	1 909	Asap
SIMMERPAN COMPLEX: OLD HR BLDG (H-BLOCK) - PREFAB (to be demolished for asbestos)	G1	Eskom Owned	Eskom	NO	1 029	1 980	Asap
SIMMERPAN COMPLEX: CHEBO TRAINING CENTRE (SCHOOL OF TECHNOLOGY)	G1	Eskom Owned	Eskom	NO	1 108	1 941	Asap
SIMMERPAN COMPLEX: NATIONAL CONTROL CENTRE (NCC)	G1	Eskom Owned	Eskom	NO	6 056	1 961	Asap
SIMMERPAN COMPLEX: SIMMER CENTRE	G1	Eskom Owned	Eskom	NO	3 268	1 961	Asap
SIMMERPAN COMPLEX: MATUMI BUILDING	G1	Eskom Owned	Eskom	NO	1 306	1 970	Asap
SIMMERPAN COMPLEX: ACKERMAN BUILDING	G1	Eskom Owned	Eskom	NO	2 662	1 976	Asap
SIMMERPAN COMPLEX: REGIONAL CONTROL CENTRE (RCC)	G1	Eskom Owned	Eskom	NO	1 349	1 993	Asap
SIMMERPAN COMPLEX: ENGINEERING BLDG	G1	Eskom Owned	Eskom	NO	10 282	1 984	Asap