Eskom	Standard	Technology

Title: **STANDARD FOR INFORMATION ON PREPAID METERS DISPATCHED FROM/ TO MANUFACTURERS AND TO/ FROM ESKOM**

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Executive Summary

This document describes the parameters to record and transfer information about Prepayment Meters dispatched from manufacturers to Eskom, and from Eskom labs to Eskom stores. The information covers new, upgraded, modified, repaired, scrapped and re-coded meters. The supply authority to receive this information is referred to as “Eskom”, even if it is used by another utility.

This document covers two file specifications as well as the scanned meter format:

1) Manufacturer meter file (Dataset A, B, and C)

2) Lab/Store meter file (Dataset A and D)

3) Scanned meters (Dataset E)

1. Introduction

Whenever a manufacturer dispatches prepayment meters to Eskom, it is also necessary to send the configuration information for every meter to Eskom in the prescribed file format. Meters returned from Eskom to the manufacturer for repair may optionally also require the meter error information to be sent to the manufacturer.

This standard defines the format for the information to be transferred.

2. Supporting Clauses

2.1 Scope

This document specifies directly or by reference, the requirements to administer information relating to dispatched Prepayment Meters. It specifies the format of the files carrying the information, from the file name through to the format of the various records, with a description of every field.

This document covers two file specifications and the scanned meters specification:

1) Manufacturer meter file (Dataset A, B, and C)

2) Lab/Store meter file (Dataset A and D)

3) Scanned meters (Dataset E)

2.1.1 Purpose

The purpose of this document is to define the format of prepayment meter configuration data to be transferred between manufacturers and Eskom.

2.1.2 Applicability

This document shall apply for prepayment meter manufacturers and Eskom Distribution Group.

2.2 Normative/Informative References

Parties using this document shall apply the most recent edition of the documents listed below:

2.2.1 Normative

[1] IEC 62055-41: Standard transfer specification (STS) - Application layer protocol for one-way token carrier systems.

2.2.2 Informative

None

2.3 Definitions

2.3.1 General

Meter files will be classified into ten record types, depending on what process the meters will go through, or have gone through, in their journey between Eskom and the Manufacturer as shown in the table below:

Table 1: of Meter Record Types

	MANUFACTURER ACTION		
Meter record type	**New motherboard**	**Repaired or replaced components**	**New meter number**
New	!		!
No Fault Found (by supplier)			Possibly
Repaired	!	!	Possibly
Modified		!	Possibly
Upgraded	!	!	Possibly
Scrapped (by supplier)			
Faulty & sent to supplier			
Recoded at Eskom store			
No Fault Found (by Eskom)			
Scrapped (by Eskom)			

NOTE:

Any one of the above meters can be sent back as a re-numbered meter (except new or scrapped meters). If a meter is returned using the same meter number, the meter details will be shown under Section B of the dataset file. If the meter is re-numbered before its return to Eskom the meter details must be shown in the Section C dataset. If the meter is recoded at an Eskom store, the meter details must be shown in the Section D dataset.

Only those meter record types (such as “No Fault Found”, “Repaired”, “Modified”, or “Upgraded”) can be re-numbered before being sent back to Eskom. These, only if re-numbered, will be in Section C dataset. If the meter is not re-numbered it will appear in Section B dataset.

Only those meters with record type L for “labs” will be in Section D dataset.

Section A, B, C dataset is sent in a manufacturer upload file while Section D dataset is sent in a Lab meter file, (see section 3.3 File Structure).

Definition	Description
Meter Presumed Faulty Sent to Manufacturer Record - (Type S)	The meter has been changed out and tested by Eskom and sent to the manufacturer. This S indicator will be used in the Dataset B record sent to the manufacturer
Meter Recoded at an Eskom Lab/Store - (Type L)	The meter has been recoded, i.e. the supply group, or tariff index and amp change. The recoding of these meters occurs at Eskom labs or stores. This L indicator will be used in the Section D dataset only sent to the Eskom CC&B.
Modified Meter Record - (Type M)	This is when an Eskom meter is returned to the manufacturer as faulty, for repair. The failure mode and cause has been logged, the meter has been repaired, and these failure modes and causes, along with the repair details are sent back to Eskom along with the meter details. However in the process of the meter being repaired, modifications were done to the meter, such as additional or changed components, i.e. changes to the Bill of Materials. This record type is identified by the M indicator.
New Meter Record - (Type N)	This is when the meter is straight from the production line. This meter has never been installed or repaired. This record type is identified by the N indicator

Definition	Description
No Fault Found Meter Record - (Type F)	This is when an Eskom meter is returned to the manufacturer as faulty, for repair. The meter is analysed for a fault, however if no fault was found, this meter is then returned to Eskom as, no fault found. This record type is identified by the F indicator.
No Fault-Found Meter at Eskom Record - (Type J)	This is when a meter comes from the field and is found by an Eskom lab that it has no fault. The meter is not sent to the manufacturer with faulty meters; rather it is cleaned and sent back to the store. This record type is identified by the J indicator.
No Fault-Found Meter at Eskom Record - (Type K)	This is when a meter comes from the field and is scrapped by an Eskom lab. The meter is not sent to the manufacturer with faulty meters, rather it is discarded by the store. This record type is identified by the K indicator.
Repaired Meter Record - (Type R)	This is when an Eskom meter is returned to the manufacturer as faulty, for repair. The failure mode and cause has been logged, the meter has been repaired, and these failure modes and causes, along with the repair details are sent back to Eskom. No alterations are done to the meter, only the faulty component(s) is/are fixed and the meter tested. This record type is identified by the R indicator.
Scrapped Meter Record - (Type Y, or Z)	There are two types of scrapped meters. A meter scrapped at manufacturer, or a meter scrapped and returned to Eskom. In both cases, the meter is beyond repair, and it is more cost effective to replace the meter. This record type is identified by the Y indicator (scrapped and returned to Eskom), or a Z indicator (scrapped at manufacturer)
Upgraded Meter Record - (Type U)	The meter was sent to the manufacturer for repairs, or specifically to be upgraded. This is when the meter motherboard is replaced. The meter is repaired, upgraded and sent back to Eskom. The Bill of Materials may or may not change; the meter may or may not be re-numbered. This record type is identified by the U indicator.

2.3.2 Disclosure Classification

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

2.4 Abbreviations

Abbreviation	Description
ASCII	American Standard Code for Information Interchange
BOM	Bill of Material
CC&B	Customer Care and Billing System
EDL	Electricity Dispenser Laboratory (now referred to as Prepayment Metering Laboratory)
FC	Fault Cause
FM	Fault Mode
Lab	Laboratory (Prepayment Metering Laboratory)
MIS	Meter Initialisation System
NFF	No Fault Found
NRS	National Rationalization of Standards

Abbreviation	Description
RDC	Regional Distribution Centre
STS	Standard Transfer Specification

2.5 Roles and Responsibilities

- Meter supplier must send the meter information files to Eskom – Revenue and Customer Application Support Management (ASM).
- Revenue and Customer Application Support Management must upload the meter information file into CC&B system.

2.6 Process for Monitoring

Not applicable.

2.7 Related/Supporting Documents

Manufacturer Codes: List maintained by the STS Association Services – www.sts.org.za

3. Document Content

3.1 File Format

The data records will be placed in a fixed width ASCII file and forwarded as an e-mail attachment to Eskom. The mailing address will be supplied at the commencement of testing.

a) Manufacturer Meter File Format

The filename will be attached with the 'SUBJECT:' of the e-mail in the form of:

SUBJECT: _CC&B_EXCHANGE_FILE_XXXX.YYY

_	Space (20 Hex)
XXXX	The manufacturer's code as per IEC 62055-41
YYY	Consecutive numbers; 001 for first file 002 for next etc.

b) Lab Meter File Format

The filename will be attached with the 'SUBJECT:' of the e-mail in the form of:

SUBJECT:_CC&B_EXCHANGE_FILE_LXX.YYY

_	Space (20 Hex)
L	An "L" to identify the file as a lab type
XX	MIS identification code as per CC&B file sent
YYY	Consecutive numbers; 001 for first file 002 for next etc.

c) Scanned Meter File Format

This file will NOT be sent to Eskom for uploading into CC&B, rather it will be uploaded into CC&B by an authorised user linked to a particular lab. The user will run a batch sequence to upload the file into CC&B and at completion CC&B will respond with the batch numbers and the meters allocated in those batches. CC&B will also indicate the quantity of unallocated meters and list them.

3.2 Recording Standards

a) Record length: Fixed, as defined for Datasets A to E below.

b) Number of records: 9999

c) ASCII characters utilised

- **A-Z** Alphabetic
- **0-9** Numeric
- **+** Plus
- **–** Minus
- **.** Decimal point
- **>** Greater than

3.3 File Structure

a) Manufacturer Meter File Structure

The file must be structured as follows:

Dataset Header	
Data records	
...	DATASET A
...	optional
Dataset Trailer	
Dataset Header	
Data record 1 line 1	
Data record 1 line 2	
Data record 2 line 1	DATASET B
Data record 2 line 2	optional
...	
Dataset Trailer	
Dataset Header	
Data record 1 line 1	
Data record 1 line 2	
Data record 2 line 1	DATASET B
Data record 2 line 2	optional
...	
Dataset Trailer	
Dataset Header	
Data record 1 line 1	
Data record 1 line 2	
Data record 2 line 1	DATASET C
Data record 2 line 2	optional
...	
Dataset Trailer	

NOTE: That it is allowed to have multiple datasets in the same file. For example, it is possible to have two or more datasets of type B in the same file, as long as the batch code in the header record is unique for every dataset in the file.

Lab Meter File Structure

The file must be structured as follows:

Dataset Header	
Data records	
...	
...	DATASET A
...	optional
...	
Dataset Trailer	
Dataset Header	
Data record 1 line 1	
Data record 1 line 2	DATASET D
Data record 2 line 1	
Data record 2 line 2	
...	
Dataset Trailer	

b) Scanned Meter File Structure

The file must be structured as follows:

Dataset Header	
Data records	
...	
...	DATASET A
...	optional
...	
Dataset Trailer	
Dataset Header	
Data record 1 line 1	
Data record 1 line 2	DATASET E
Data record 2 line 1	
Data record 2 line 2	
...	
Dataset Trailer	

3.3.1 Dataset A

This dataset will contain repair codes and descriptions, as decided on by each manufacturer. They will reflect the procedure(s) taken to repair the electricity meter returned to Eskom. These codes and descriptions will be included in the database of Eskom to build a dynamic catalogue of repair details per manufacturer.

Only new codes and descriptions will be added to the Eskom repair detail catalogue, which implies that a manufacturer has to supply Eskom with dataset A only as part of the first file that contains repaired electricity meter records, and thereafter with every new repair code generated. This dataset should precede the dataset (B) containing the repaired records which utilise the new repair detail codes.

3.3.2 Dataset B

This dataset will contain the detail records of new and repaired meters that have retained their serial numbers, and scrapped electricity meters. These records are specified to be longer than 80 characters, which require their continuation over two lines.

The record type can be any of New, No Fault Found, Repaired, Modified, Upgraded, Scrapped at manufacturer, or Scrapped and returned to Eskom.

The meters will be identified in accordance with the meter numbers as defined in IEC 62055-41.

3.3.3 Dataset C

This dataset will contain the detailed repair record of any meter that has had a serial number change since arriving at the manufacturer. This record type can be for any one of a No Fault Found, Repaired, Modified, or Upgraded record type. These records are specified to be longer than 80 characters, which require their continuation over two lines.

The meters will be identified in accordance with the meter numbers as defined in IEC 62055-41.

3.3.4 Dataset D

This dataset will contain the detail records of meters that have been re-coded at an Eskom laboratory only. These records are specified to be longer than 80 characters, which require their continuation over two lines.

The record type will be L – for Lab. These meters are recoded and then returned to Eskom stores for installation.

The meters will be identified in accordance with the meter numbers as defined in IEC 62055-41.

3.3.5 Dataset E

This dataset will contain the detail records of faulty meters that have been scanned at an Eskom store/laboratory. These records are specified to be longer than 80 characters, which require their continuation over two lines.

The record type may be “S” for faulty meters sent to manufacturer, “J” for no fault found or “K” for scrapped meters which were not sent to the manufacturer.

The meters will be identified in accordance with the meter numbers as defined in IEC 62055-41.

3.4 Data Format Standards

a) Date fields

All date fields are formatted CCYYMMDD.

b) Time fields

All time fields are formatted HHMMSS

c) Numeric fields (N)

All numeric fields which reflect Rand or kWh contain decimal points.

Numeric fields are right justified and left padded with zero's (30 Hex).

Certain numeric fields which reflect Rand or kWh are signed; the sign is fixed, occupying the first (leftmost) character of the field.

Certain numeric fields may be filled with spaces (20 Hex) if unused, as indicated in the particular field descriptions.

d) Alphanumeric fields (A)

All alphanumeric fields are left justified and space filled. There is an exception defined for the Manufacturer Code which may be two characters or four characters in length. To ensure the Manufacturer Code remains directly adjacent to the following fields for Meter Serial Number and the Check Digit, the Manufacturer Code must always be right justified and left filled with spaces if it is only two characters in length.

Unused fields must be filled with spaces (20 Hex).

Every line of the record must be ended with a carriage return (0D Hex) and a line feed (0A Hex) character.

3.5 Record Layouts and Explanatory Notes

a) Dataset A, B and C Header Record

Field No.	Field Name	Length	Char. Position	Alpha Or Numeric	Description
1	Section indicator	9	1-9	A	Must contain ">>>MC158A" or ">>>MC158B" or ">>>MC158C" indicating section.
2	Record type	1	10-10	A	Must contain "H" for header.
3	Version	3	11-13	N	Must contain 031. Indicates version of file format, to be updated upon revision of this document.
4	Manufacturer code	4	14-17	A	As per IEC 62055-41 Must be right justified and left filled with spaces if only two characters in length.
5	Date	8	18-25	N	File creation date, this date will be used as the first audit instance of the electricity meter in the case of a new meter, and as the audit date returned in the case of a repaired meter.
6	Time	6	26-31	N	File creation time, to be used for the same purposes as the date field.
7	File sequence number	3	32-34	N	The extension of the filename as explained in section 3.1.
8	Batch number	8	35-42	A	Indicates the: manufacturer batch in which the meters referenced in the dataset B and C records were sent back to an Eskom store or Eskom batch in which the meters referenced in the dataset B 'type S' records were sent to the Manufacturer. If multiple Datasets are in the same file, this batch number must be unique for every Dataset in the file

b) Dataset D Header Record

Field No.	Field Name	Length	Char. Position	Alpha Or Numeric	Description
1	Section indicator	9	1-9	A	Must contain ">>>MC158D" indicating section.
2	Record type	1	10-10	A	Must contain "H" for header.
3	Version	3	11-13	N	Must contain 032. Indicates version of file format, to be updated upon revision of this document.
4	Laboratory code	2	14-15	N	As per laboratory catalogue on the CC&B system
5	Date	8	16-23	N	File creation date, this date will be used as the first audit instance of the electricity meter in the case of a new meter, and as the audit date returned in the case of a repaired meter.
6	Time	6	24-29	N	File creation time, to be used for the same purposes as the date field.
7	File sequence number	3	30-32	N	The extension of the filename as explained in section 3.1.
8	MIS Identification code	8	33-40	A	MIS identification code as per CC&B file sent

c) Dataset E Header Record

Field No.	Field Name	Length	Char. Position	Alpha Or Numeric	Description
1	Section indicator	9	1-9	A	Must contain ">>>MC158E" indicating section.
2	Record type	1	10-10	A	Must contain "H" for header.
3	Version	3	11-13	N	Must contain 033. Indicates version of file format, to be updated upon revision of this document.
4	Laboratory code	2	14-15	N	As defined in the CC&B catalogue with prefix EDL.

Field No.	Field Name	Length	Char. Position	Alpha Or Numeric	Description
5	Date	8	16-23	N	File creation date, this date will be used as the first audit instance of the electricity meter in the case of a new meter, and as the audit date returned in the case of a repaired meter.
6	Time	6	24-29	N	File creation time, to be used for the same purposes as the date field.
7	File sequence number	3	30-32	N	The extension of the filename as explained in section 3.1.
8	User code	6	33-38	A	The user code, associated with the lab code. Used to identify user when using handheld units.
9	Current location	1	39-39	A	The current location of the scanned meters. This will always be “F” for lab faulty.

d) Standard Dataset A Data Record

Field No.	Field Name	Length	Char. Position	Alpha Or Numeric	Description
1	Repair detail code	4	1-4	N	A numeric code generated by the manufacturer, to be added to the repair-detail catalogue if non-existent, if it already exists in the catalogue, this record will be ignored and an error message will be generated.
2	Filler	1	5-5	A	Space (20 Hex).
3	Repair detail description	60	6-65	A	A sixty character description supplied by the manufacturer.

e) Line One of a Standard Dataset B Data Record

Field No.	Field Name	Length	Char. Position	Alpha Or Numeric	Description
1	Manufacturer code	4	1-4	A	As per IEC 62055-41 Must be right justified and left filled with spaces if only two characters in length.
2	Meter serial number	8	5-12	N	As per IEC 62055-41

Field No.	Field Name	Length	Char. Position	Alpha Or Numeric	Description
3	Meter number check digit	1	13-13	N	As per IEC 62055-41
4	Record line number	1	14-14	N	Record continuation number; value 1.
5	Record type	1	15-15	A	One character; "N" or "F" or "R" or "M" or "U" or "Y" or "Z" for meters returned from manufacturer, "S" faulty meters to manufacturer. Refer to Section 2.3 Definitions
6	Token Technology	2	16-17	N	As per IEC 62055-41
7	Algorithm Technology	2	18-19	N	As per IEC 62055-41
8	Meter accuracy calibration	6	20-25	N	The accuracy in percentage, of a particular meter at a point on the curve specified by the particular manufacturer that could be verified at any time by means of an accuracy test. Format Snn.nn; S = sign (+ or -),nn.nn numeric with a decimal point. If the accuracy is unknown, then the percentage is -99.99 If the accuracy is perfect, then the percentage is +00.00
9	Date of manufacture	8	26-33	N	Date of manufacture.
10	Dispatch date	8	34-41	N	Date of dispatch.
11	Distributor code	4	42-45	N	Allocation via NRS. Can be filled with zeros
12	Store code	5	46-50	A	The Eskom store to where the meter has been shipped. Refer to annex for valid codes. Use 00000 if unknown.
13	Tariff Index	2	51-52	N	As per IEC 62055-41
14	Supply Group	6	53-58	N	This code only applicable to STS meters, for proprietary meters fill with zeros.
15	Residual credit value	8	59-66	N	Format Snnnnn.n This indicates the credit on the meter in Rand or kWh when it arrived for repair. This can be a negative or positive value. If the value is irretrievable, a value of -99999.9 should be supplied.

Field No.	Field Name	Length	Char. Position	Alpha Or Numeric	Description
16	Credit value for new/repaired meters	7	67-73	N	Format nnnnn.n This indicates the credit put onto the meter in Rand or kWh after manufacture or repair.
17	Load Power Limit	6	74-79	N	Set power limit in kW. Format kkk.ww with k and w numeric and a decimal point.

f) Line Two of a Standard Dataset B Data Record

Field No.	Field Name	Length	Char. Position	Alpha Or Numeric	Description
1	Manufacturer code	4	1-4	A	As per IEC 62055-41 Must be right justified and left filled with spaces if only two characters in length.
2	Meter serial number	8	5-12	N	As per IEC 62055-41
3	Meter number check digit	1	13-13	N	As per IEC 62055-41
4	Record line number	1	14-14	N	Record continuation number; value 2.
5	Total kWh to date	8	15-22	N	Format nnnnnn.n indicates the kWh dispensed by the meter.
6	Repair code	4	23-26	N	Refer dataset A record, for 'N' new meter records, fill with spaces. Allowance is made for three repair details. To be filled with spaces if unused. These are manufacturer defined. If used, manufacturers must inform Eskom of the codes to be used in advance.
7	Repair code	4	27-30	N	
8	Repair code	4	31-34	N	
9	Failure mode	2	35-36	A	Use attached table for failure modes
10	Failure cause	2	37-38	A	Future use, leave blank.
11	Cost of repair	8	39-46	N	Format Snnnn.nn, in Rands.

Field No.	Field Name	Length	Char. Position	Alpha Or Numeric	Description
12	Guarantee period	8	47-54	N	Guarantee expiry date.
13	Meter type	6	55-60	A	Must be the Eskom defined Meter Type as per Annex E.
14	Key Revision Number (KRN)	1	61-61	N	As per IEC 62055-41. Configured as specified for the particular Supply group.
15	Base Date	4	62-65	N	Must be “1993” or “2014” or “2035” as per IEC 62055-41. Configured as specified for the particular Supply group and defined by the specific KRN in previous field.

g) Line One of a Standard Dataset C Data Record

Field No.	Field Name	Length	Char. Position	Alpha Or Numeric	Description
1	Manufacturer code	4	1-4	A	As per IEC 62055-41 Must be right justified and left filled with spaces if only two characters in length.
2	New Meter serial number	8	5-12	N	As per IEC 62055-41
3	New Meter number check digit	1	13-13	N	As per IEC 62055-41
4	Record line number	1	14-14	N	Record continuation number; value 1.
5	Record type	1	15-15	A	One character; "F" or "R" or "M" or "U" for meters returned from manufacturer. Refer to Section 2.3 Definitions
6	Token Technology	2	16-17	N	As per IEC 62055-41
7	Algorithm Technology	2	18-19	N	As per IEC 62055-41

Field No.	Field Name	Length	Char. Position	Alpha Or Numeric	Description
8	Meter accuracy calibration	6	20-25	N	The accuracy in percentage, of a particular meter at a point on the curve specified by the particular manufacturer that could be verified at any time by means of an accuracy test. Format Snn.nn; S = sign (+ or -),nn.nn numeric with a decimal point. If the accuracy is unknown, then the percentage is -99.99. If the accuracy is perfect, then the percentage is +00.00
9	Date of manufacture	8	26-33	N	Date of manufacture.
10	Dispatch date	8	34-41	N	Date of dispatch.
11	Distributor Code	4	42-45	N	Allocation via NRS can be filled with zeros
12	Store code	5	46-50	A	The Eskom store to where the meter has been shipped. Refer to annex for valid codes. Use 00000 if unknown.
13	Tariff index	2	51-52	N	As per IEC 62055-41
14	Supply group	6	53-58	N	This code only applicable to STS meters, for proprietary meters fill with zeros.
15	Residual credit value	8	59-66	N	Format Snnnnn.n This indicates the credit on the meter in Rand or kWh when it arrived for repair. This can be a negative or positive value. If the value is irretrievable, a value of -99999.9 should be supplied.
16	Credit value for new/repaired meters	7	67-73	N	Format nnnnn.n This indicates the kWh credit put onto the meter in Rand of kWh after manufacture or repair.
17	Load Power Limit	6	74-79	N	Set power limit in kW. Format kkk.ww with k and w numeric and a decimal point.

h) Line Two of a Standard Dataset C Data Record

Field No.	Field Name	Length	Char. Position	Alpha Or Numeric	Description
1	Manufacturer code	4	1-4	A	As per IEC 62055-41 Must be right justified and left filled with spaces if only two characters in length.
2	New Meter serial number	8	5-12	N	As per IEC 62055-41
3	New Meter number check digit	1	13-13	N	As per IEC 62055-41
4	Record line number	1	14-14	N	Record continuation number; value 2.
5	Total kWh to date	8	15-22	N	Format nnnnnn.n indicates the kWh dispensed by the meter.
6	Repair code	4	23-26	N	Refer dataset A record, for 'N' new meter records, fill with spaces. Allowance is made for three repair details. To be filled with spaces if unused. These are manufacturer defined. If used, manufacturers must inform Eskom of the codes to be used in advance.
7	Repair code	4	27-30	N	
8	Repair code	4	31-34	N	
9	Failure mode	2	35-36	A	Use only attached list for failure Modes
10	Failure cause	2	37-38	A	Future use. Leave blank.
11	Cost of repair	8	39-46	N	Format Snnnn.nn, in Rand.
12	Guarantee period	8	47-54	N	Guarantee expiry date.
13	Meter type	6	55-60	A	Must be the Eskom defined Meter Type as per Annex E.
14	Manufacturer code	4	61-64	A	As per IEC 62055-41 Must be right justified and left filled with spaces if only two characters in length.
15	Old Meter serial number	8	65-72	N	As per IEC 62055-41

Field No.	Field Name	Length	Char. Position	Alpha Or Numeric	Description
16	Old Meter number check digit	1	73-73	N	As per IEC 62055-41
17	Token Technology	2	74-75	N	As per IEC 62055-41
18	Algorithm Technology	2	76-77	N	As per IEC 62055-41
19	Key Revision Number (KRN)	1	78-78	N	As per IEC 62055-41. Configured as specified by Eskom for the particular Supply group.
20	Base Date	4	79-82	N	Must be “1993” or “2014” or “2035” as per IEC 62055-41. Configured as specified for the particular Supply group and defined by the specific KRN in previous field.

i) Line One of a Standard Dataset D Data Record

Field No.	Field Name	Length	Char. Position	Alpha Or Numeric	Description
1	Manufacturer code	4	1-4	A	As per IEC 62055-41 Must be right justified and left filled with spaces if only two characters in length.
2	Meter serial number	8	5-12	N	As per IEC 62055-41
3	Meter number check digit	1	13-13	N	As per IEC 62055-41
4	Record line number	1	14-14	N	Record continuation number; value 1.
5	Record type	1	15-15	A	One character; "L" for Lab.
6	Token Technology	2	16-17	N	As per IEC 62055-41
7	Algorithm Technology	2	18-19	N	As per IEC 62055-41

Field No.	Field Name	Length	Char. Position	Alpha Or Numeric	Description
8	Meter accuracy calibration	6	20-25	N	The accuracy in percentage, of a particular meter at a point on the curve specified by the particular manufacturer that could be verified at any time by means of an accuracy test. Format Snn.nn S = sign (+ or -),nn.nn numeric with a decimal point. If the accuracy is unknown, then the percentage is -99.99. If the accuracy is perfect, then the percentage is +00.00
9	Date of manufacture	8	26-33	N	Date of manufacture. This field may be left blank if unknown
10	Dispatch date	8	34-41	N	Date of dispatch. Use the date when the meter is re-coded.
11	Distributor Code	4	42-45	N	Allocation via NRS, can filled with zeros
12	Store code	5	46-50	A	The Eskom store to where the recoded meter is to be sent to. This code is allocated via CC&B, e.g.: 05102
13	Tariff index	2	51-52	N	As per IEC 62055-41
14	Supply group	6	53-58	N	This code only applicable to STS meters, for proprietary meters fill with zeros.
15	Residual credit value	8	59-66	N	Format Snnnnn.n This indicates the credit on the meter in Rand or kWh when it arrived for repair. This can be a negative or positive value. If the value is irretrievable, a value of -99999.9 should be supplied.
16	Credit value for new/repaired meters	7	67-73	N	Format nnnnn.n. This indicates the credit put onto the meter in Rand or kWh after manufacture or repair. This field may be filled with spaces if unknown
17	Load Power Limit	6	74-79	N	Set power limit in kW. Format kkk.ww with k and w numeric and a decimal point.

j) Line Two of a Standard Dataset D Data Record

Field No.	Field Name	Length	Char. Position	Alpha Or Numeric	Description
1	Manufacturer code	4	1-4	A	As per IEC 62055-41 Must be right justified and left filled with spaces if only two characters in length.
2	Meter serial number	8	5-12	N	As per IEC 62055-41
3	Meter number check digit	1	13-13	N	As per IEC 62055-41
4	Record line number	1	14-14	N	Record continuation number; value 2.
5	Total kWh to date	8	15-22	N	Format nnnnnn.n indicates the kWh dispensed by the meter. This field may be filled with spaces if unknown
6	Repair code	4	23-26	N	To be filled with spaces if unused otherwise must be according to codes supplied to Eskom in advance by suppliers.
7	Repair code	4	27-30	N	
8	Repair code	4	31-34	N	
9	Failure mode	2	35-36	A	To be filled with spaces if unused. If used, must be according to failure mode table.
10	Failure cause	2	37-38	A	To be filled with spaces, for future use.
11	Cost of repair	8	39-46	N	Format Snnnn.nn, in Rand. To be filled with spaces if unused.
12	Guarantee period	8	47-54	N	Guarantee expiry date. This field may be filled with spaces if unknown
13	Meter type	6	55-60	A	Must be the Eskom defined Meter Type as per Annex E.
14	Key Revision Number (KRN)	1	61-61	N	As per IEC 62055-41. Configured as specified by Eskom for the particular Supply group.
15	Base Date	4	62-65	N	Must be “1993” or “2014” or “2035” as per IEC 62055-41. Configured as specified for the particular Supply group and defined by the specific KRN in previous field.

k) Line One of a Standard Dataset E Data Record

Field No.	Field Name	Length	Char. Position	Alpha Or Numeric	Description
1	Manufacturer code	4	1-4	A	As per IEC 62055-41 Must be right justified and left filled with spaces if only two characters in length.
2	Meter serial number	8	5-12	N	As per IEC 62055-41
3	Meter number check digit	1	13-13	N	As per IEC 62055-41
4	Record line number	1	14-14	N	Record continuation number; value 1.
5	Record type	1	15-15	A	One character; "N" or "F" or "R" or "M" or "U" or "Y" or "Z" for meters returned from manufacturer, "S" faulty meters to manufacturer, “J” or “K” for meters from the field. Refer to Section 2.3 Definitions.
6	Token Technology	2	16-17	N	BLANK
7	Algorithm Technology	2	18-19	N	BLANK
8	Meter accuracy calibration (OPTIONAL)	6	20-25	N	The accuracy in percentage, of a particular meter at a point on the curve specified by the particular manufacturer that could be verified at any time by means of an accuracy test. Format Snn.nn; S = sign (+ or -),nn.nn numeric with a decimal point. If the accuracy is unknown, then the percentage is -99.99. If the accuracy is perfect, then the percentage is +00.00
9	Date tested	8	26-33	N	Date for meter scanned
10	Date out of lab	8	34-41	N	Date when the file is created
11	Distributor Code	4	42-45	N	BLANK
12	Store code	5	46-50	N	BLANK
13	Tariff index	2	51-52	N	BLANK.

Field No.	Field Name	Length	Char. Position	Alpha Or Numeric	Description
14	Supply group	6	53-58	N	BLANK
15	Residual credit value (OPTIONAL)	8	59-66	N	Format Snnnnn.n. This indicates the credit on the meter in Rand or kWh when it arrived for repair. This can be a negative or positive value. If the value is irretrievable, a value of -99999.9 should be supplied.
16	Credit value for new/repaired meters	7	67-73	N	BLANK
17	Load Power Limit	6	74-79	N	BLANK

l) Line Two of a Standard Dataset E Data Record

Field No.	Field Name	Length	Char. Position	Alpha Or Numeric	Description
1	Manufacturer code	4	1-4	A	As per IEC 62055-41 Must be right justified and left filled with spaces if only two characters in length.
2	Meter serial number	8	5-12	N	As per IEC 62055-41
3	Meter number check digit	1	13-13	N	As per IEC 62055-41
4	Record line number	1	14-14	N	Record continuation number; value 2.
5	Remarks	20	15-34	A	The remarks needed by CC&B if the meter is from the manufacturer, was repaired and sent back to a store.
6	Failure mode	2	35-36	A	Must be according to the attached list of failure modes.
7	Failure cause	2	37-38	A	Future use, leave blank
8	Cost of repair	8	39-46	N	BLANK

Field No.	Field Name	Length	Char. Position	Alpha Or Numeric	Description
9	Guarantee period	8	47-54	N	BLANK
10	Is the meter from field?	1	55-55	A	“Y” if meter is from the field, “N” if the meter is from the manufacturer.
11	Was the meter repaired	1	56-56	A	“Y” is the meter was repaired, “N” if meter was not repaired.
12	Meter destination	1	57-57	A	“S” for supplier, “T” for store, “C” for scrapped.
13	Key Revision Number (KRN)	1	58-58	N	As per IEC 62055-41. Configured as specified by Eskom for the particular Supply group.
14	Base Date	4	59-62	N	Must be “1993” or “2014” or “2035” as per IEC 62055-41. Configured as specified for the particular Supply group and defined by the specific KRN in previous field.

m) Dataset A Trailer Record

Field No.	Field Name	Length	Char. Position	Alpha Or Numeric	Description
1	Dataset indicator	9	1-9	A	Must contain ">>>MC158A".
2	Record type	1	10-10	A	Must contain "T" for trailer.
3	Number of records	4	11-14	A	Total number of new repair details in file.

n) Dataset B and C and D and E Trailer Record

Field No.	Field Name	Length	Char. Position	Alpha Or Numeric	Description
1	Dataset indicator	9	1-9	A	Must contain ">>>MC158B" or ">>>MC158C" or ">>>MC158D" indicating section.
2	Record type	1	10-10	A	Must contain "T" for trailer.

Field No.	Field Name	Length	Char. Position	Alpha Or Numeric	Description
3	Calibration hash total	6	11-16	N	Hash total of meter calibration percentages. Format Snn.nn; S = sign (+ or -), nn.nn is calculated by adding all the meter accuracy calibration fields and using the truncated last four digits. (e.g. Hash total = -8765.54 then calibration hash total = -65.54). THIS FIELD WILL BE BLANK FOR DATASET E.
4	Number of records	4	17-20	A	Total number of records in file.

4. Authorisation

This document has been seen and accepted by:

Name and surname	Designation
M Covenden	Support Services Manager
W Olivier	Application Support Manager

5. Revisions

Date	Rev	Compiler	Remarks
Jan 2022	5	J O'Kennedy	Added Smart meter types in Annex C and E
Jun 2016	4	J O'Kennedy	Changed version no. in header for datasets B, C, D and E Changed manufacturer code from numeric to alphanumeric Changed manufacturer code from 2 to 4 characters in all datasets. Change Manufacturer meter type field to Meter type field. (Now Eskom defined generic meter types) Add Key revision no. (KRN) to data record line 2 in all datasets. Add Base date to data record line 2 in all datasets. Add Annex E, Eskom defined meter types.
Mar 2015	3	E Makwarela	No change in content, change in format only. This document supersedes document DSP_34-1640 New document number 240-76637071
Feb 2012	2	E Makwarela	Revise document DSP 34-1640. No changes to document content. New template for document.
Nov 2007	1	E Makwarela	Revision 0 of DISSCABN5 converted to DSP 34-1640
Nov 2003	0	E Makwarela	Revision 2.5 has been formatted and re-numbered as DISSCABN5 in accordance with the Eskom Documentation System, the revision reverts to 0.
Jan 1995	2.0	D van der Ryst	Modify content with format for MC158
Nov 1992	0	R Kaplan	Administration Procedure (first release)

6. Development team

- Jimmy O'Kennedy - PTM&C
- Edison Makwarela - PTM&C

7. Acknowledgements

Not applicable.

Annex A – General Rules

MISCELLANEOUS

Prior to accepting any "live" data from a manufacturer, Eskom will conduct acceptance trials with test files supplied by the manufacturer, until compatibility with the requirements is achieved. Any new version of this document will also require acceptance tests. Backward version compatibility is catered for.

VALIDATION OF DATA

All files submitted to Eskom will be validated. Some classes of error will result in rejection of the file whilst certain errors, such as invalid electricity meter numbers, will cause the record to be rejected. In both cases error details will be reported to the manufacturer who submitted the file.

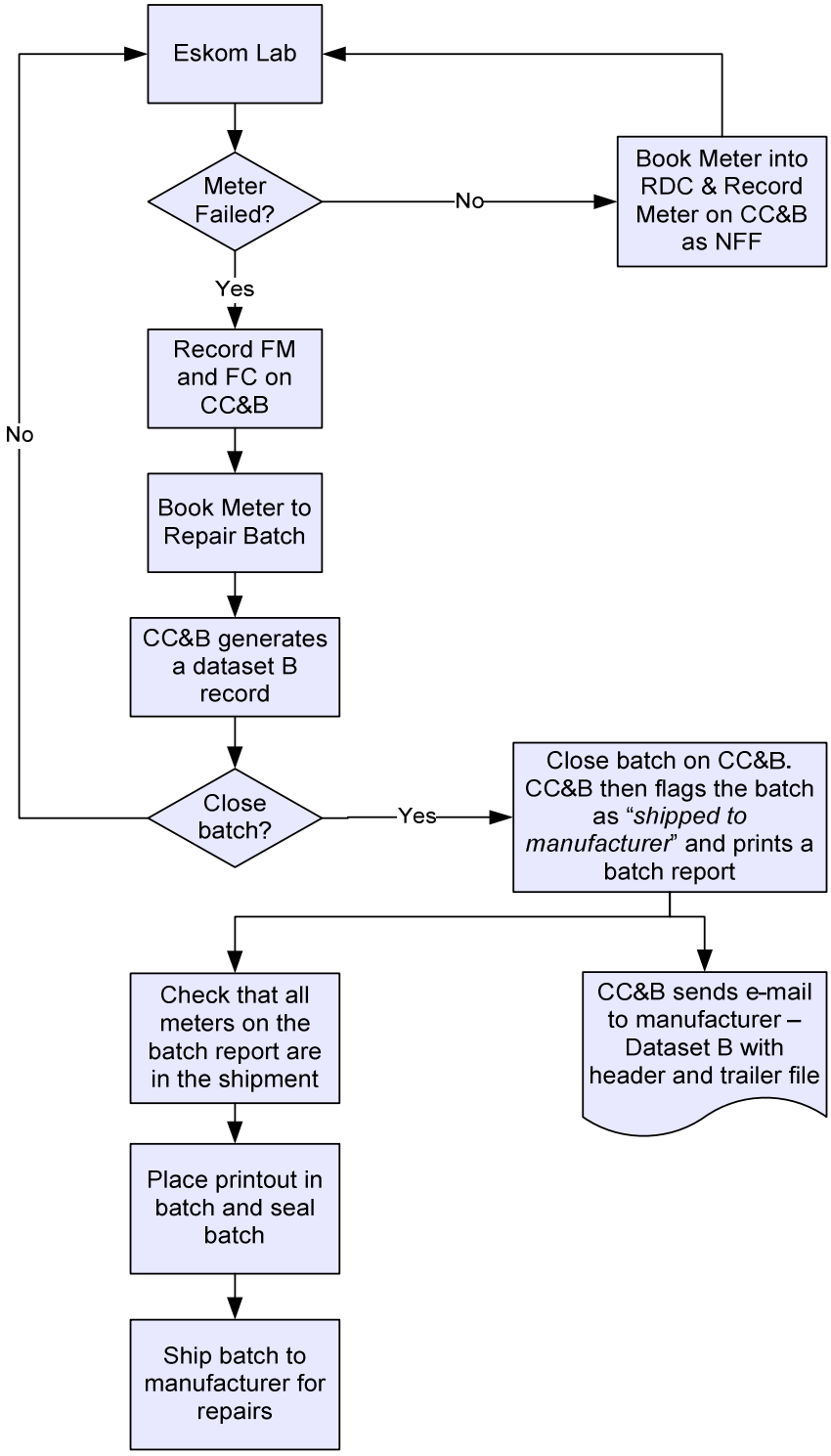
TEST DATA

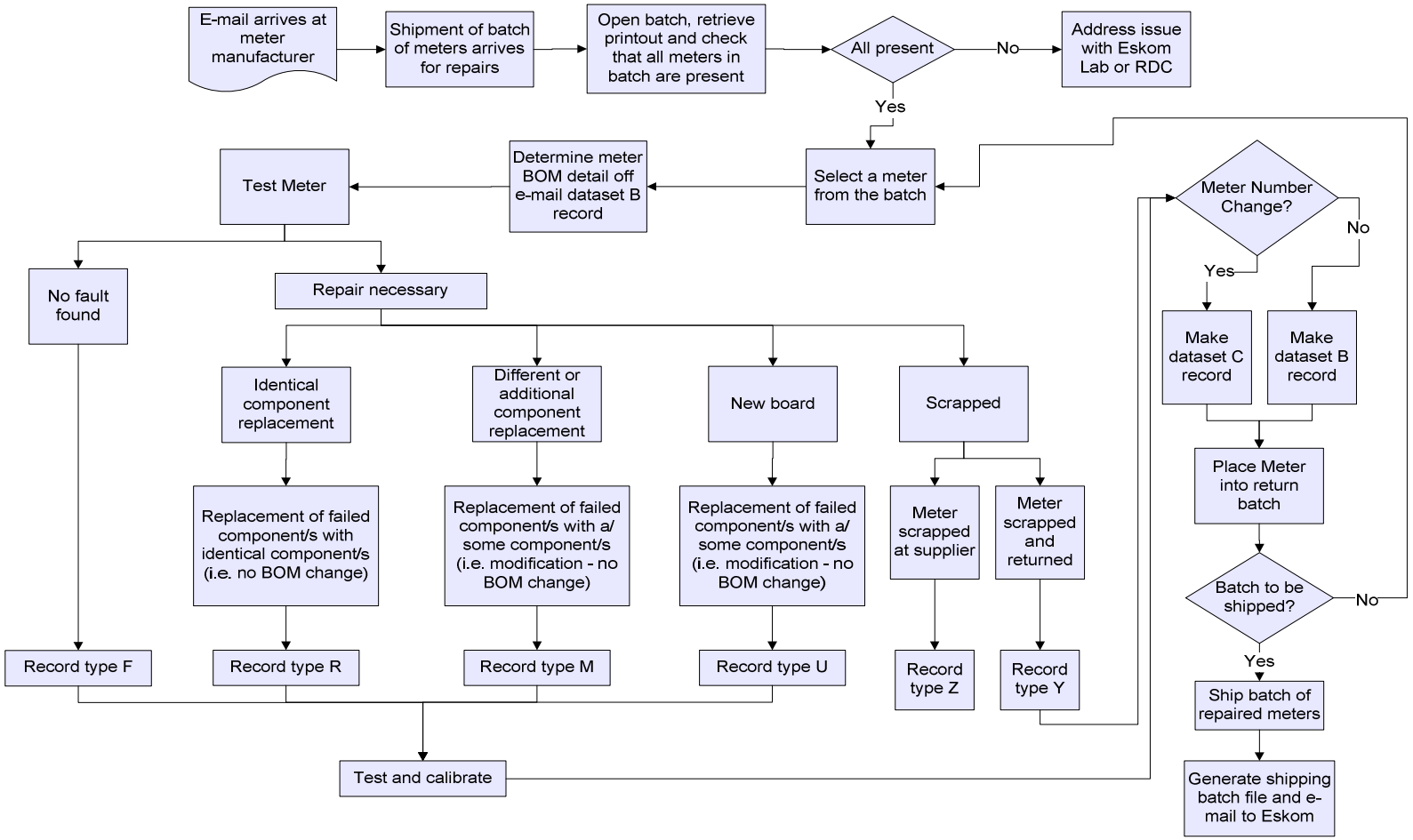
If a manufacturer makes any changes to his system, hardware or means of supplying the file to Eskom, he must arrange for fresh acceptance testing, prior to implementing the changes in the production system.

REPAIR METER PROCESS

The following two process diagrams show the:

- Internal Eskom process: Lab test, if repaired at lab the meter is returned to Eskom store. If still faulty it is booked and shipped to manufacturer
- Manufacturer Process: Manufacturer test, repair and ship to Eskom





Annex B – Failure Modes/Removal Reasons

No.	Failure Mode
1	Serious Box / Physical Damage
2	Burn / Water Damage
3	Meter Dead
4	No Trip / No Metering
5	Constant / Erratic Trip
6	Buttons / Card Reader Faulty
7	Display / Lights Faulty
8	Accuracy Out _____%
9	Require Recoding
10	(“No Fault Found”) - not applicable as a removal reason
11	Admin Error

Annex C – Meter Category List from STS Specification

Meter Category	Algorithm technology	Token Carrier Type	Manufacturer
STS Basic Magcard (All Manuf) (07-01) *	07	01	All Manufacturers
STS Basic Keypad (All Manuf) (07-02) *	07	02	All Manufacturers
STS Smart Meter without DLMS (07-07)	07	07	All Manufacturers
STS Smart Meter with DLMS (07-08)	07	08	All Manufacturers
For Future Misty Use			
Misty Basic Keypad (All Manuf) (11-02)	11	02	All Manufacturers
Misty Smart Meter without DLMS (11-07)	11	07	All Manufacturers
Misty Smart Meter with DLMS (11-08)	11	08	All Manufacturers

Annex D – Store Codes List

Store Codes		
Code	**Description**	**Eskom Cluster**
05310	Brackenfell	Cape Coastal
05320	George	Cape Coastal
05620	King Williams Town	Cape Coastal
05630	Colesberg	Gemma
05610	Umtata	Cape Coastal
05210	Rosherville	Gauteng
05520	Nelspruit	Limlanga
05510	Witbank	Limlanga
05720	Warmbath	Limlanga
05710	Pietersburg	Limlanga
05730	Thohoyandou	Limlanga
05120	New Germany	Central East
05110	Vryheid	Central East
05130	Empangeni	Central East
05140	Howick	Central East
05150	Marburg	Central East
05440	Qwa Qwa	Central East
05410	Welkom	Central East
05420	Klerksdorp	Gemma
05430	Kimberley	Gemma
05450	Upington	Gemma
05010	Capital	
05000	Maintenance	
05030	Strategic	
05050	Direct to site	

Annex E – Eskom Defined Meter Types

Meter Types	
Meter Type	**Description**
PRSTSKEY *	Basic STS prepaid meter that only operates with numeric tokens. Includes ED, ECU and Split Meters.
PRSTSDLM	Smart meter with DLMS support. Operates both in prepaid and conventional mode and supports kWh as well as currency tokens.
SMRTK1	Smart meter that only operates in conventional mode and measures kWh.
CVKWH1	Basic conventional meter that only measures kWh. Includes basic electronic conventional meters.

Note:

Currently CC&B can only use PRSTSKEY (prepaid keypad) meters with algorithm **07** and token type **02**. That means prepayment smart meters must for the foreseeable future, also be registered as PRSTSKEY.