

Title: **TECHNICAL EVALUATION  
CRITERIA FOR POWER  
QUALITY MONITORING  
INSTRUMENTS**

Unique Identifier: **240-171000527**

Alternative Reference Number: **n/a**

Area of Applicability: **Engineering**

Documentation Type: **Report**

Revision: **2**

Total Pages: **10**

Next Review Date: **n/a**

Disclosure Classification: **Controlled  
Disclosure**

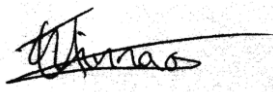
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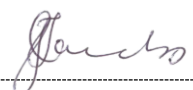
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## Content

	Page
1. Introduction .....	3
2. Supporting clauses.....	3
2.1 Scope .....	3
2.1.1 Purpose .....	3
2.1.2 Applicability.....	3
2.2 Normative/informative references .....	3
2.2.1 Normative .....	4
2.2.2 Informative.....	4
2.3 Definitions .....	4
2.3.1 General.....	4
2.3.2 Disclosure classification.....	4
2.4 Abbreviations .....	5
2.5 Roles and responsibilities .....	5
2.6 Process for monitoring .....	5
2.7 Related/supporting documents .....	5
3. Project Timeframes and Deliverables .....	5
4. Tender Returnables (Technical).....	6
5. Tender Evaluation (Technical) .....	7
5.1 Phase 1- Technical Sub-Category: Product and Modem A&B Schedules.....	8
5.2 Phase 2 – Technical Sub-Category: Risk and Support .....	9
5.3 Phase 3 – Technical Sub-Category: Meter, Modem and Software Evaluation.....	9
6. Authorization .....	10
7. Revisions .....	10
8. Development team .....	10
9. Acknowledgements .....	10

## Tables

Table 1: Meter Types.....	3
Table 2: List of returnables for Eskom standards/specifications .....	7
Table 3: Technical scoring breakdown .....	8
Table 4: Phase 1&2 scoring breakdown .....	8
Table 5: Scoring of items in Technical Schedules A&B.....	8
Table 6:: Scoring of items in Meter, Modem and Software Evaluation .....	9

## **1. Introduction**

This document provides an overview of Eskom's technical requirements for an enquiry for the supply of power quality monitoring meters for permanent installations and investigations at substations and kiosks. This document provides an overview of the requirements for the different meters, and acts as an index and supplement to the detailed specification. This document defines the technical evaluation criteria that will be used in the enquiry for power quality monitoring meters.

## **2. Supporting clauses**

### **2.1 Scope**

The Power Quality (PQ) Instrument project is motivated by the regulatory requirement stipulated in the Grid Code which requires Distribution division to report Quality of Supply (QoS) data to the National Energy Regulator of South Africa (NERSA) according to the requirements of SANS1816. Distribution division is required to report on QoS data to NERSA to ensure compliance to the operating license.

Distribution division requires the instruments to meet the Grid Code requirements for new substations and to replace existing instruments which do not meet the grid code compliance as well as international measurement standards (e.g., IEC 61000-4-30) and are at end-of-life.

A secondary factor informing the need for PQ Instrument project is measurement of power quality relating to Renewable Power Producers (RPPs), as suitable instruments are needed to measure and assess the performance of Renewable Power Producers (RPPs) against their contracts with Eskom.

#### **2.1.1 Purpose**

This document provides information relating to an enquiry for the technical evaluation, testing, acceptance and supply of power quality monitoring meters for use in Eskom. A 5-6 month technical evaluation period for meter testing and software evaluation is catered for in 2025. The enquiry includes the following meter types:

**Table 1: Meter Types**

	<b>Meter Type</b>
1	Power Quality Monitoring Instrument, permanent installation – substations, 19 inch,- (including essalaic connector and racks)
2	Power Quality Monitoring Instrument, permanent installation – non-substation, surface mount
3	Power Quality Monitoring Instrument, investigations – surface mount

Suppliers may tender for any single meter type, multiple meter types or all the above meter types. Preference shall be given to suppliers that provide for a single software package that support multiple PQ meter types. Preference will be given to instrument suppliers that can export PQ data in Eskom's defined PQ data format.

The successful tenderers shall be required to provide the necessary templates, drawings, manuals, type test certificates, calibration certificates and training material as well as providing ongoing product training.

#### **2.1.2 Applicability**

This document shall apply to the Technology, and Distribution Divisions.

## **2.2 Normative/informative references**

Parties using this document shall apply the most recent edition of the documents listed in the following paragraphs.

### 2.2.1 Normative

- [1] ISO 9001 Quality Management Systems.
- [2] 240-132938253 (ESP 32-1132): Power Quality Monitoring Instrument Specification.
- [3] 240-64038621: Remote Device Communication Standard for Operational and Engineering Data Retrieval and Remote Access.
- [4] 240-82534274: Definition of the Eskom Power Quality Data Import Format (Epqdif).
- [5] IEC 62586-1, Power Quality Measurement in Power Supply Systems – Part 1: Power quality Instruments (PQI).
- [6] IEC 62586-2, Power Quality Measurement in Power Supply Systems – Part 2: Functional Tests and Uncertainty Requirements.
- [7] 240-171000527\_1: PQ Monitoring devices schedules, A&B Eskom Investigation
- [8] 240-171000527\_2: PQ Monitoring devices schedules, A&B Eskom Permanent Substation
- [9] 240-171000527\_3: PQ Monitoring devices schedules, A&B Eskom Permanent Non-Substation

### 2.2.2 Informative

None

## 2.3 Definitions

### 2.3.1 General

Definition	Description
<b>Fundamental component</b>	Component whose frequency is the fundamental frequency
<b>Influence quantity</b>	Any quantity which may affect the working performance of measuring equipment
<b>Power quality</b>	Characteristics of the electricity at a given point on an electrical system, evaluated against a set of reference technical parameters
<b>Range of influence quantities</b>	Range of values of a single influence quantity

### 2.3.2 Disclosure classification

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

## 2.4 Abbreviations

Abbreviation	Description
ILAC	International Laboratory Accreditation Cooperation
kWh	Kilowatt hour
OEM	Original Equipment Manufacturer
PPFPA	Preferential Procurement Policy Framework
PQ	Power Quality
QOS	Quality of Supply
SANAS	South African National Accreditation System
SANS	South African National Standard
SHEQ	Safety, Health, Environment and Quality

## 2.5 Roles and responsibilities

This document defines the technical evaluation criteria that will be used by the Eskom technical evaluation team for the evaluation of power quality monitoring instruments.

## 2.6 Process for monitoring

Not applicable.

## 2.7 Related/supporting documents

Not applicable.

## 3. Project Timeframes and Deliverables

The technical evaluation will be conducted over three phases per meter type as follows:

Phase 1 & 2: Gatekeeper Evaluations, Product and Modem A&B Schedules, Risk and Support

- Duration: 1 month

Suppliers shall provide one prototype instrument, per meter type for which a tender is being submitted by the specified date.

Phase 3: Meter, Modem and Software Evaluation

- Duration: 5-6 months

Only suppliers that meet the technical criteria set aside for phase 1&2 will move onto phase 3 of the technical evaluation.

Supplier visits may be conducted during this phase of the evaluation. Supplier visits shall be conducted to verify the information provided in the questionnaire relating to risk and support. Where required, suppliers shall be contacted for clarity via Eskom commercial.

#### **4. Tender Returnables (Technical)**

Tenderers shall supply the following information:

- 1) A declaration of compliance to gatekeepers in the excel file for each item.
- 2) Completed general questionnaire as listed in the excel file for each item.
- 3) Completed risk and support questionnaire as listed in the excel file. Suppliers are to complete a separate risk and support questionnaire sheet for each item/product being offered.
- 4) Completed Deviation Schedule for each item.
- 5) Details regarding the make and model numbers of all meters offered and auxiliary components, communication modules etc.
- 6) Data sheets and product manuals for all components offered.
- 7) IEC 61000-4-30/ IEC62586-2 class A certification and testing report.
- 8) Details of the data acquisition software to manage downloads and specification of hardware needed, on contract award.

Proof of testing and certificates for type tests specified in section 8 of IEC 62586-1

Table 2 summarizes the responses required from Tenderers relating to the standard documents for this enquiry. The following abbreviations are used:

- DS = Deviation schedule. Tenderers shall submit a formal document listing the document number and title and any deviations to the document's requirements, indicating specific section and/or clause numbers. Separate deviation schedules shall be compiled for each Eskom document. The tenderer shall be deemed to have claimed compliance to all clauses for which no deviations are indicated.
- A&B = Schedules A&B. Tenderers shall complete Schedule B in the documents provided and indicate where supporting information can be found with the tender returnables. Where ranges or test levels are specified, tenderers shall respond with the actual range or level attained rather than the statement "Comply".
- Q = Questionnaire/Performance Questions. Tenderers shall respond to questions listed in the excel file.

The symbol "X" in Table 2 indicates that a specific returnable is mandatory for the corresponding report, standard or specification. Failure to submit any of the indicated returnables will result in a tender being excluded from the evaluation.

**Table 2: List of returnables for Eskom standards/specifications**

	Overview	DS	A&B
	<b>Specifications – Common standards</b>		
1	240-64038621: Remote Device Communication Standard for Operational and Engineering Data Retrieval and Remote Access	X	-
	<b>PQ Meter specifications – Detailed meter specifications</b>		
3	(240-119430619 - Stabilized) 240-132938253 (ESP 32-1132): Power Quality Monitoring Instrument Specification	-	X
4	240-82534274: Definition of The Eskom Power Quality Data Import Format (Epqdif)	X	
5	240-100321540: Unified Cellular Modem Standard	X	X

## **5. Tender Evaluation (Technical)**

Tender responses shall be evaluated using the methodology of the Preferential Procurement Policy Framework Act (05 of 2000). High level gatekeeper criteria are applicable, represented by minimum scoring thresholds in two evaluation categories. Tenders must pass all two categories to be able to continue with the evaluation process. Any Tenderer that is not successful in this process will be disqualified.

This section details the methodology to be employed by Eskom in scoring the Technical category. The scoring methodology for other categories is provided elsewhere amongst the tender documentation.

Each tender shall pass all Technical Gatekeeper criteria as listed in the excel file. Tenders not meeting any of the Technical Gatekeepers shall be immediately excluded from further evaluation, and shall be assigned a Technical score of 0%.

The overall technical scoring shall be made up of scoring in the various sub-categories during the different phases of the technical evaluation as follows:

Table 3: Technical scoring breakdown

Technical Criteria	Minimum Threshold	Weightings
Meter A&B Schedules, Modem A&B Schedules, Risk and Support (phase 1&2)	80	50
Meter, Modem and Software Evaluation (phase 3)	85	50
<b>Overall minimum threshold for qualification</b>	<b>82.5</b>	<b>Σ = 100</b>

Phase 1&2 shall be made up of scoring in two sub-categories and shall be adjudicated a score out of 100 as follows:

Table 4: Phase 1&amp;2 scoring breakdown

Phase 1&2 – Technical sub-category	Weightings
Product A&B Schedules	70
Modem A&B Schedules	5
Risk and Support	25
Total	100
<b>Minimum threshold for qualification</b>	<b>80</b>

Only suppliers that meet the minimum threshold for phase 1&2 will move onto phase 3 of the technical evaluation. Tenders that do not meet the minimum threshold shall be immediately excluded from further evaluation.

Phase 3 shall be made up of scoring in the sub-category of meter, modem and software evaluation and shall be adjudicated a score out of 100 with a minimum threshold for qualification of 85. Only suppliers that meet the minimum threshold for phase 3 will be afforded an overall technical score in table 3.

The detailed scoring methodologies in each sub-category are defined in the following sections:

## 5.1 Phase 1- Technical Sub-Category: Product and Modem A&B Schedules

This section shall comprise scoring of the technical schedules of the different meter types and modem. The A&B Schedules use a default weight of 1 for each scored item. Critical items are assigned higher weights. For example, a weight of 10 indicates that the item will count the same as ten items with weight 1. Each item will be assigned a score by the Eskom evaluation team based upon the tendered response and cross-checked with the supporting documents provided.

Table 5: Scoring of items in Technical Schedules A&amp;B

Criteria	Score
<b>Fully compliant</b> (Indicated as <b>Y</b> in A&B Schedules)	3
<b>Partially compliant</b> - minor deviation (Indicated as <b>P</b> in A&B Schedules)	1
<b>Non-compliant</b> - major deviation (Indicated as <b>N</b> in A&B Schedules)	0

The score for each item will be multiplied by its weight to obtain the total score per item. All scores for the A&B Schedule will be tallied and shall be calculated based on the maximum possible score. This will be recorded as the percentage score per meter type.



## **5.2 Phase 2 – Technical Sub-Category: Risk and Support**

The Eskom technical team will evaluate the risk and support capability of the supplier / product based on the Risk and Support Questionnaire in the excel file, deviations schedules and from the non-scored components in Sub-category: Product and Modem A&B Schedules. The evaluation of the risk and support of the product / supplier shall be adjudicated a score out of 100 made up of two areas as follows:

**Product Risk (60):** A score derived for the product risk based on the following areas and weighted as follows:

- Installed base / time that the product has been installed (weight 25)
- Deviations from standards (weight 25)
- Ability to deliver (weight 25)
- Historical performance (weight 25)

**Support (40):** A score derived for support based on the following areas and weighted as follows:

- Local expertise (weight 25)
- Link between local agent and OEM (weight 20)
- Maintenance support (weight 25)
- Training (weight 15)
- Spares holding (weight 15)

## **5.3 Phase 3 – Technical Sub-Category: Meter, Modem and Software Evaluation**

Only instruments that meet the minimum criteria for phase 1 & 2 will be evaluated as part of phase 3.

Prototype meters, their respective metering software and modems shall be functionally evaluated and tested against the functional working requirements of the respective specifications and operational field requirements determined by the Eskom technical team and allocated a score based on the criteria listed below. The scoring principles applied to the Technical Schedules A&B shall apply to the meter, modem and software evaluation as per the following table.

**Table 6:: Scoring of items in Meter, Modem and Software Evaluation**

<b>Criteria</b>	<b>Score</b>
Fully compliant	3
Partially compliant (minor deviation)	1
Non-compliant (major deviation)	0

### **Functional Evaluation**

- Software evaluation against specification requirements.
- Status alarms and event recordings.
- Compatibility with Eskom software, enterprise systems and laptop images.
- Instrument functionality and field operational field tests.
- Operational Communications testing.

## 6. Authorization

This document has been seen and accepted by:

Name and surname	Designation
Thomas Jacobs	Senior Manager:Technology & Engineering (Acting)
Ulrich Minnaar	NP& QOS SC Chairperson

## 7. Revisions

Date	Rev.	Compiler	Remarks
Aug 2025	2	T.Kgosiemang	Document required for the issue of enquiry
Feb 2018	1	T.Kgosiemang	Document required for the issue of enquiry

## 8. Development team

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

- Ulrich Minnaar
- Mohammed Omar
- Thabiso Kgosiemang

## 9. Acknowledgements

Not applicable.