



Specification – Revenue Electricity Meters

Standard Number: HPC-8DJ-16-0001-2013

Document Control		
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* Must be the Process Owner and is the person assigned authority and responsibility for managing the whole process, end-to-end, which may extend across more than one division and/or functions, in order to deliver agreed business results.

** This person will have the power to grant the process owner the authority and responsibility to manage the process from end to end.

*** Frequency period is dependent upon circumstances– maximum is 5 years from last issue, review, or revision whichever is the latest. If left blank, the default must be 1 year unless otherwise specified.

Revision Control		
Revision	Date	Description
0	09/07/2013	First Issue
1	12/07/2018	First Revision

STAKEHOLDERS	
<i>The following positions must be consulted if an update or review is required:</i>	
Manager Customer Service	Strategic Asset Management Consultant
Manager Meter Services	Manager Supply Chain

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1 SCOPE

This specification covers Horizon Power's minimum requirements for electricity meters used to measure energy for trade. This is governed by the Western Australian Electricity Industry Act 2004 and the Electricity Industry (Metering) Code 2012 and is additionally guided by the National Electricity Rules.

It covers the full range of electricity metering requirements:

- 1) LV connected Single Phase Meters;
- 2) LV connected Polyphase (3 phase) Meters;
- 3) LV Current Transformer connected Meters; and
- 4) HV Current and Voltage Transformer connected Meters.

Tests prescribed will evaluate the performance of these meters and must comply with this specification.

Approval in terms of this specification may be obtained by:

- a) Successful completion of the appropriate tests required by this specification by an independent and accredited test authority.
- b) Provision of test certificates from an independent and accredited test authority based upon an alternative specification, with test requirements at least equivalent to this specification. Details of approval in this regard are provided in 11.1.1.

NOTE: Verification of accreditation of the test authority must be provided by the National Association of Testing Authorities, (NATA).

2 NORMATIVE REFERENCES

2.1 Standards

The following documents contain provisions that, through reference in the text, constitute requirements of this specification. At the time of publication, the editions indicated were valid. All standards and specifications are subject to revision, and parties to agreements based on this specification are encouraged to investigate the possibility of applying the most recent editions of the documents listed below. Information on currently valid national and international standards and specifications can be obtained from the Information Centre and Engineering Department at Bentley.

Table 1: List of Applicable Standards

Standard Number	Standard Title
AS 1284.11	Electricity Metering Part 11: Single Phase Multifunction Watt Hour Meters
AS 1284.12	Electricity Metering Part 12: Poly Phase Multifunction Watt Hour Meters (Class 1)

Standard Number	Standard Title
AS 1284.13	Electricity Metering Part 13: In-service Compliance Testing
AS 1284.5	Refer to AS 62053.21
AS 1284.7	Refer to AS 62054.21
AS 62052.11	Electricity Metering Equipment (AC) – General Requirements , Test and Test Conditions Part 11: Metering Equipment (IEC 62052-11, Ed, 1.0 (2003) MOD)
AS 62053.21	Electricity Metering Equipment (AC) – Particular Requirements, Part 21: Static meters for Active Energy (classes 1 and 2) (IEC 62053-21, Ed.1.0 (2003) MOD)
AS 62053.22	Electricity Metering Equipment (AC) – Particular Requirements, Part 22: Static meters for Active Energy (classes 0.2 S and 0.5 S)
AS 62053.23	Electricity Metering Equipment (AC) – Particular Requirements, Part 23: Static meters for Reactive Energy (classes 2 and 3)
AS 62054.21	Electricity Metering (ac)-Tariff and load Control, Part 21: Particular requirements for time switches
AS 62056.21	Electricity Metering – Data exchange for meter reading, tariff and load control, Part 21: Direct local data exchange

2.2 Other References

Smart Metering Infrastructure Minimum Functionality Specification, issued by NSSC committee of the AEMO, under the National Smart Metering Program. Available at <https://link.aemo.com.au/sites/wcl/smartmetering/Pages/BRWG.aspx>

National Measurement Institute Meter Pattern Certificate of Approval

National Measurements Act 1960

WA Electricity Industry (Metering) Code 2012

National Electricity Rules

2.3 Definitions and Abbreviations

For the purposes of this specification the following definitions apply:

2.3.1

Definitions

Active Energy	A measure of electricity, being the time integral of the product of voltage and the in-phase component of electric current flow across a metering point, expressed in Watt hours (Wh) or multiples thereof
Basic Current (I _b)	Value of current with which the relevant performance of a direct connected meter is fixed
Multifunctional meter	A meter having the capability of measuring and displaying a variety of parameters, e.g. energy, power, voltage, current, power factor, frequency
Pattern or Type Approval	The process whereby an impartial body examines the pattern or type (design) of an instrument prototype against a set of national or international metrological specifications. This determines whether an instrument is capable of retaining its calibration over a range of environmental and operating conditions, and ensures that the instrument is incapable of facilitating fraud
Rated Current (I _n)	Value of current with which the relevant performance of a current transformer operated meter is fixed
Reactive Energy	A measure in VAR-hours (VARh) of the alternating exchange of stored electricity in inductors and capacitors, which is the time-integral of the product of voltage and the out-of-phase component of electric current flow, across a metering point

2.3.2

Abbreviations

1Ø LV	LV connected Single Phase Meters
3Ø HV CTVT	HV Current and Voltage Transformer connected Meters
3Ø LV	LV connected Polyphase (3 phase) Meters
3Ø LV CT	LV Current Transformer connected Meters
AEMO	Australian Energy Market Operator
AS	Australian Standard
AS/NZS	Australian and New Zealand Standard
HV	High Voltage >1000 Volts AC
LV	Low Voltage < 1000 Volts AC
NATA	National Association of Testing Authorities Australia
NSSC	National Stakeholder Steering Committee of the AEMO

2.4 Drawings

Not Applicable.

3 REQUIREMENTS

Notwithstanding the requirements specified herein, any material or manufacturing method giving results at least equivalent to those specified may also be considered.

The Vendor in the Proposal must detail any departure from this Technical Specification of the products offered. Any departure found, but not detailed as such, must provide grounds for rendering the Proposal as non-conforming.

The Products must comply with the descriptions detailed in Appendix E Schedule B of this Specification, the relevant Australian Standards and the following requirements. Vendors may offer their standard items but any variation to this Specification must be clearly stated in the Proposal.

Where a description specifies a particular brand and reference number, only that specified product will be acceptable.

Where the Vendor proposes to supply proprietary goods, the Vendor must specify the Brand and Manufacturer's catalogue reference number of the Product it proposes to supply. Failure to specify such information must provide grounds for rendering the Proposal as non-conforming.

3.1 General Requirements

All meters must fully comply with relevant Standards listed in Section 2 unless otherwise specified.

Specifically in the following clauses 3.2 and 3.3:

- LV connected Single Phase Meters (1Ø LV) are referenced to AS 1284 Electricity metering Part 11: Single-phase multifunctional watt-hour meters; whilst
- LV connected Polyphase (3 phase) Meters (3Ø LV), LV Current Transformer connected Meters (3Ø LV CT) and HV Current and Voltage Transformer connected Meters (3Ø HV CTVT) are referenced to AS 1284 Electricity metering Part 12: Polyphase multifunctional (non-demand) watt-hour meters.

The meters must comply to the WA Electricity (Metering) Code 2012 and the National Measurement Institute Meter Pattern Certificate of Approval.

3.2 Climatic Conditions

The Meters must be suitable for use throughout the state of Western Australia in conditions where a wide range of solar radiation, temperatures and humidity are experienced. The Meter must be suitable for continuous operation under the environmental conditions listed in HPC-9EJ-01-0001-2013 *Horizon Power Environmental Conditions*.

All meters must perform in accordance with the requirements for the climatic conditions specified in AS 62052.11 Section 6.

3.3 Construction Requirements

The meters must be electronic (static) in design.

3.3.1 General

The meters must be in accordance with AS 62052.11 Section 5: *Mechanical Requirements and Tests* and AS 1284 Parts 11 and 12 Section 19 *Construction*.

- 1) The meter must have adequate mechanical strength, and must withstand the temperature increase that is likely to occur under normal working conditions.
- 2) The components of the meter must be fastened and secured against loosening during normal operating conditions, as well as during transportation.
- 3) The design and construction of the meter must minimise the risks of short-circuiting live parts and accessible conducting parts that may be caused by accidental loosening or unscrewing of wiring or components.
- 4) The meter must withstand solar radiation without impairing its function. The appearance of the equipment, and in particular the legibility of the markings, must not be altered by prolonged exposure to solar radiation.
- 5) The housing must be for surface mounting.

3.3.2 Display

The displays for the meters must comply with AS 1284 Parts 11 and 12 Section 11 *Display*.

- 1) The display must have anti-glare and non-blinking properties. Filters must have a non-reflective finish and be suitable for use in direct sunlight.
- 2) The display intensity must not be sensitive to variations in auxiliary supply voltage and frequency, for variations of $\pm 20\%$ for the voltage and $\pm 5\%$ for the frequency.

3.3.3 Test Facilities

Suitable test facilities on the meter must be provided in accordance with AS 1284 Parts 11 and 12 Section 17 *Test Facilities*.

3.3.4 Meter Circuits and Terminations

The circuits and terminations of the meters must comply with AS 1284 Parts 11 and 12 Section 6 *Meter Circuits and Terminations*.

- 1) All wiring to and from the meter must go through the terminal block.
- 2) Terminal blocks must be positioned at the base of the meter.
- 3) There must be two securing screws on each terminal for the fastening of the supply wiring.
- 4) Auxiliary inputs and outputs may either be spring clamp terminals, or screw type terminals with one securing screw.

- 5) The securing screws must be of non-ferrous metal.
- 6) Terminal blocks must not be mounted directly onto a printed circuit board.
- 7) Insulation between terminals must be in accordance with the values in AS 62052 Part 11 and AS 62053 Parts 21, 22 and 23.
- 8) The terminals, the conductor fixing screws, or the external or internal conductors must never come into contact with metal terminal covers.
- 9) No circuits that carry current from instrument current transformers under normal operating conditions must be routed by way of a printed circuit board.
- 10) Terminal covers must:
 - Enclose the actual terminals, the conductor fixing screws, and a suitable length of the external conductors and their insulation.
 - Prevent access to the terminals of installed meters without breaking the mechanical seal on the cover.

3.3.5 Marking Requirements

Name plate and terminal marking for the meter must comply with AS 62052.11 Section 5.12 *Marking of the meter* and AS 1284 Parts 11 and 12 Section 20 *Marking*.

3.3.6 Sealing Requirements

Provision must be made for sealing the meter cover, terminal cover and demand reset button separately.

3.4 Electrical Requirements

3.4.1 Input Currents and Voltages

The meters must be capable of handling the following currents and voltages:

Table 2: Input Requirements

Meter	Voltage Rating at 50 Hz AC	Current Rating at 50 Hz	
		Basic (I_b)	Maximum (I_{max})
1Ø LV	240 V	≥ 5 A	≤ 100 A
1Ø LV	240 V	≥ 10 A	≤ 100 A
3Ø LV	240/415 V	≥ 10 A	≤ 100 A
	480 V in exceptional cases		
		Rated (I_n)	Maximum (I_{max})
3Ø LV CT	240/415 V	≥ 5 A	≤ 20 A
3Ø HV CTVT	63.5/110 V	≥ 1 A	≤ 4 A
	Generally used in a 1 A circuit		
	63.5/110 V	≤ 5 A	≥ 20 A
	Generally used in a 5 A circuit		

The above values should be interpreted as per AS 62052.11 Section 4: *Standard electrical values* and AS 1284 Parts 11 and 12 Section 5: *General Requirements*.

3.4.2 Electrical Parameters

The electrical parameters of the meters must comply with AS 62052.11 and AS 62053.21 Section 7 *Electrical requirements*.

3.5 Functional Requirements

3.5.1 Installation Type and Class

The meters must be capable of Advanced Metering Infrastructure with smart metering capability as set-out in the national smart metering program *Smart Metering Infrastructure Minimum Functionality Specification*.

The application of the meters is as follows:

Table 3: Meter Application to WA Electricity Metering Code 2012

Meter	Installation Type	Accuracy Class
1Ø LV	5 and 6	1 for active energy
3Ø LV	4, 5 and 6	1 for active energy 2 for reactive energy

Meter	Installation Type	Accuracy Class
3Ø LV CT	4 and 5	1 or 0.5 for active energy 2 for reactive energy
3Ø HV CTVT	1, 2 and 3	0.2 or 0.5 for active energy 0.5 or 1 for reactive energy

3.5.2 Energy Measurements

The measurements for energy of the meters must comply with AS 1284 Parts 11 and 12 Section 7 *Energy Measurements*.

3.5.3 Demand Measurements

The measurements for demand of the meters must comply with AS 1284 Parts 11 and 12 Section 8 *Demand Measurements*.

3.5.4 Other Measurements

Any other measurements of the meters must comply with AS 1284 Parts 11 and 12 Section 9 *Other Measurements*.

3.5.5 Data Storage

The desirable data storage requirements must comply with AS 1284 Parts 11 and 12 Section 10 *Data Storage*.

3.5.6 Internal Clock

The internal clock of the meter must comply with AS 62054 Part 21: *Particular requirements for time switches*.

3.5.7 Programmability

The meter's programs must comply with AS 1284 Parts 11 and 12 Section 13 *Programmability*.

- 1) All software supplied with the system must be documented comprehensively, with all the features and functions discussed, including a set of examples as to how the meters can be configured for different tariff structures and applications. Included in the documentation must be a list of possible problems and how to fix them.
- 2) A list of acceptably compatible computers must be provided for any software package offered.
- 3) With the expected complexity of programmable metering equipment, training must be provided for all relevant staff by the supplier of the meter. This training must cover installation, maintenance, and operation of the system and the configuration software.
- 4) Provision must be made in the configuration software to export the raw data in a flat ASCII format suitable for incorporating into a spread sheet or similar package.

- 5) Horizon Power must be given a Horizon Power wide licence agreement for all software offered
- 6) Future revisions of software must be supplied in terms of the agreed contract.

3.5.8 Firmware

For the purposes of this document, the firmware of the meter is considered to form an integral part of the meter. The firmware will determine the correct functioning of the metering device in accordance with the requirements of this specification, and any related enquiry specification. Future versions of firmware must be supplied under the terms of the agreed contract.

3.5.9 Communications

The meter communications must comply with AS 62056 Part 21 and AS 1284 Parts 11 and 12 Section 14 *Communications*.

3.5.10 Security

Meter security must comply with *Electricity Industry (Metering) Code 2012* Section 3.8 *Security of metering installations* and AS 1284 Parts 11 and 12 Section 16 *Security*.

3.6 Calibration

All meters must be delivered in a state of calibration certified by a NATA accredited facility.

The calibration results must be available to Horizon Power in an electronic format as an import file, compatible with Microsoft Windows software.

3.7 Accuracy Tests

The meter must comply with the necessary intrinsic accuracy requirements as stated in the relevant type test specifications, as follows:

- *Electricity Industry (Metering) Code 2012* Appendix 1 *Metering installation Types and accuracy requirements in Part 3*;
- AS/NZS 1284 Part 13: *In-Service compliance testing*; and
- AS 62053 Parts 21, 22 and 23: Section 8 *Accuracy requirements*.

3.8 Spares

Meter Terminal Covers must be available as a spare part, including:

- Standard cover that comes with the meter
- Longer version of the standard cover

Batteries must be available as a spare part, where the meter has been designed to replace the battery without breaking the meter body seals.

Electricity Meters are factory sealed and the warranty of the meter is usually made void if the seal is broken. Meters that have broken body seals excluding terminal cover seals should be disposed of and must not be returned to service.

4 STORAGE

Not Applicable.

5 RELIABILITY

Vendors must comment on the reliability of the Product and the performance of the materials offered over an operational life of 20 years, under the specified field of application and conditions of service.

The meter must comply with the requirements of AS 1284 Parts 11 and 12 Section 18 Reliability.

Comments must provide evidence in support of the claimed reliability and performance for the Product offered, including information on Failure Mode and Effect Analysis.

Products that are found on inspection (in the Horizon Power store) not to conform to this technical specification must be replaced by the Vendor at no cost to Horizon Power. This replacement is required irrespective of any prior factory approvals or quality audits undertaken at the AMF.

6 SAFETY

Material Safety Data Sheets (MSDS) applicable for each different product or chemical ingredient in the product which is considered harmful to personnel or environment in any manner, must be supplied with the Proposal.

7 ENVIRONMENTAL CONSIDERATIONS

Vendors must comment on the environmental soundness of the design and the materials used in the manufacture of the Products offered. In particular, comments should address such issues as recyclability and disposability at the end of service life as well as disposability of materials supplied.

8 INFORMATION TO BE PROVIDED WITH THE PROPOSAL

The Proposal must provide all documentation and information as requested in the Specification, including any further relevant information on the Product offered. The Proposal must be complete in all respects. Failure to comply may cause the Proposal to be considered incomplete and hence non-conforming.

The Vendor must provide two copies of the documentation and information detailed below with their Proposal:

- 1) Description and brief history of the Vendor(s) company, or companies, and principals involved. If an alliance or joint venture is formed with other companies to supply the Meters, a description and brief history, including details of the principals of those companies, are required.
- 2) Reference list of the organisation(s) utilising similar Meters supplied over the previous 10-year period. For the Meters listed, reference to a client's representative must be made for the purpose of verification of claimed performance.

- 3) Nomination of a Senior Contact Officer within the Vendor's organisation, to accept responsibility for clarification of the submission or supply further information where required.
- 4) Vendors must clearly identify the source of technical support and product development for the Product offered.
- 5) Documentation that includes material specification, drawings, MSDS, and other information to be fully described in the Proposal.
- 6) Certified copies of results of type tests carried out on similar Products at a NATA test laboratory or approved equivalent.
- 7) The Compliance with the Specification form in Schedule A fully completed.
- 8) The Technical Schedules must be provided.
- 9) Any other information required by other Clauses of this Specification or that which the Vendor considers would be relevant to the assessment.

All information provided must be in English and all measurement units must be in metric units. Pamphlets or descriptive literature not in English or not using metric units will not be considered as forming part of any tender.

9 INFORMATION TO BE SUPPLIED FOLLOWING ACCEPTANCE OF PROPOSAL

The Preferred Vendor must provide to Horizon Power within three (3) months from the date of the letter of acceptance:

- For each Product, a completed technical Schedule in DOC (MS Word) electronic format.
- For each Product, a digital photograph in electronic JPG format.
- Electronic versions (in DOC or Acrobat PDF format) of the Material Safety Data Sheets (MSDS) supplied with the tender submission.
- For each Product, supporting technical information (i.e. specification sheets) in DOC or PDF electronic format.

10 CHANGE OF DESIGN

The Preferred Vendor must not make any variation of any materials or assemblies without prior approval in writing from Horizon Power.

11 TESTS

Horizon Power requires that Meters connected or used in Horizon Power's network must have been manufactured by an Approved Manufacturing Facility (AMF). To gain approval of a manufacturing facility the supplier must, as a minimum undertake the steps as outlined below.

11.1 Test Requirements

The Vendor must, prior to first Delivery, complete the type tests and inspections as required by the relevant Australian Standards and as required by AS 62052 Part 11.

The passing of such tests must not prejudice the right of Horizon Power to reject the meter if it does not comply with the Specification when installed.

11.1.1 Type Tests

Horizon Power reserves the right to witness Type Tests and must be given advance notice by the Vendor to be available to witness such tests.

Type Testing must be undertaken by a NATA (National Association of Testing Authorities) accredited test house or by a test house possessing accreditation from a NATA MRA (Mutual Recognition Agreement) partner. A formal report covering the outcome of the testing must be made available to Horizon Power.

Evidence must be submitted by the Vendor indicating that all type tests required by the relevant Australian Standards listed in Table 1 have been satisfactorily carried out on Meters.

Where Meters have been tested to International Standards only, sufficient type test evidence must be submitted to confirm equivalence of Meter performance to the relevant Australian standard.

12 DOCUMENTATION AND SAMPLES/QUALITY MANAGEMENT

NOTE: All documentation must be in English.

12.1 Type Test Certificates/Reports

Test certificates, test reports or any other supporting documents supplied as evidence for compliance to relevant standards must be made available in English for review by Horizon Power.

12.2 Samples

Any deviations between the Meter supplied as a sample to Horizon Power and the Meter offered in the Proposal must be detailed by the Vendor.

12.3 Quality Management

- 1) The supplier (deemed to be an organisation that undertakes any manufacturing or assembly operation) must have a formally documented and implemented quality management system (QMS), that as a minimum meets with the requirements of the international code of practice for quality systems ISO 9002. Horizon Power reserves the right to audit quality management systems for suitability and effectiveness, and to verify all goods for conformance prior to delivery.
- 2) Foreign, and third party manufacturers, must, in addition, hold valid certification of their quality management system. Such certification must be from a national quality systems certification body (Registrar), duly accredited by an accreditation body, which is signatory to a mutual recognition agreement with Australia.
- 3) Additional quality requirements may apply when Horizon Power enters into a term contract. Specific requirements will be specified therein.

- 4) Horizon Power requires that each AMF undergoes auditing from an independent external accredited auditing authority to confirm on-going compliance with ISO 9001 at a frequency of no less than two times per annum. The resulting report issued by the auditing authority covering the findings of the audit must be supplied to Horizon Power as part of the program to maintain continuing recognition of AMF status.

13 MANUFACTURING FACILITY AUDIT

Prior to orders being placed, Horizon Power or its representative must undertake a quality audit of the manufacturing facilities used to provide Meters in accordance with this technical specification. The Vendor must make all necessary provisions with the manufacturing facility to enable the audit to take place. The audit must as a minimum ensure that the following aspects of the Vendor's Quality and OHS Systems are complied with:

- 1) Safety
- 2) Quality Plan
- 3) Inspection and Test Plan (ITP)
- 4) Records
- 5) Incoming Raw Materials
- 6) Packaging
- 7) Product Testing
- 8) Product Standards
- 9) Maintenance
- 10) Tooling
- 11) Stock Management and Production

At the completion of the aforementioned Audit, Horizon Power must provide the Vendor with a report detailing findings from the Audit. The Vendor must introduce effective corrective actions as required before endorses the manufacturing facility as an Approved Manufacturing Facility (AMF).

14 ORDERING

Horizon Power will only place orders with and accept meters from any Approved Manufacturing Facility (AMF) i.e. one that has passed a quality audit by Horizon Power or its representative and approval granted by Horizon Power.

APPENDIX A REVISION INFORMATION


(Informative) Horizon Power has endeavoured to provide standards of the highest quality and would appreciate notification of errors or queries.

Each Standard makes use of its own comment sheet which is maintained throughout the life of the standard, which lists all comments made by stakeholders regarding the standard.


A comment sheet found in **CS10# 1632234** can be used to record any errors or queries found in or pertaining to this standard. This comment sheet will be referred to each time the standard is updated.

Date	Rev No.	Notes
28/05/2013	0	First Issue
12/07/2017	1	First Revision: 1) Removal of environmental conditions and instead referenced <i>HP Environmental Conditions</i> standard. 2) Amend Table 3, voltage and current requirements

APPENDIX B IMPACT ASSESSMENT

	Impact Assessment			
	Document Title:	Specification for Revenue Electricity Meters		
	Document No:	HPC-8DJ-16-0001-2013	Revision No:	0
	CS No:			
Activity		Detail		
1. What training is required to implement this specification?		N/A		
2. Who will require training?		Metering Technician		
3. What equipment will be required for training?		Meter		
4. What special tools/equipment will be required for training?		PC		
5. Time period for training to be completed		1 week		
6. Does the document affect the budget?		No		
7. Time period for implementation of requirements after training is completed.		None		
8. Were the critical points in the document determined?		N/A		
Business Change Control	Total Implementation period			
	Total training cost			
	Total cost of tools/equipment			
	Total cost involved			
Comments:				
Assessment Compiled by:		Recommended by (Functional Responsibility)		
Name:		Name:		
Designation:		Designation:		
Department:		Department:		
Date:		Date:		

APPENDIX C QUALITY ASSURANCE

DOCUMENT NUMBER		HPC-8DJ-16-0001-2013					QUALITY ASSURANCE		DM NUMBER	
DEVICE DESCRIPTION		LABEL MATERIAL NO.					METER PURCHASE		ASSET OWNER	
		ASSET ID/ STOCK NO								
MANUFACTURER				DIMENSION						
ITEM	OPERATION/EQUIPMENT/FACILITY		DOCUMENT REF.	WHO CHECKS	INITIAL	DATE/TIME	QUALITY ASSURANCE CRITERIA	PASS Y/N	COMMENTS	
1	Metering Technician to be Contacted									
1.1	Manufacture Name						*****			
1.2	Horizon Ordering Number						*****			
1.3	Meter Number and Number of Meter's						*****			
1.4	Gross Weight									
1.5	Nett Weight									
SYMBOLS AND ABBREVIATIONS										
H = HOLD POINT		S = SUPERVISOR								
W = WITNESS POINT		T = TECHNICIAN, EL = ELECTRICIAN		REVISION						
V = VERIFICATION POINT		E = ENGINEER		DATE						
S/C = SUBCONTRACTOR		PM = PROJECT MANAGER		APPROVED BY						

APPENDIX D SCHEDULE A: COMPLIANCE DOCUMENT

The Vendor must indicate below whether this offer is fully compliant with the nominated clause in this Specification. A YES must ONLY be indicated if the offer is 100% compliant with the relevant Clause. If NO is indicated and supporting documents are submitted, then mark the ATT box with the attachment number

CLAUSE NUMBER		YES	NO	ATT.
1.	SCOPE			
2.	NORMATIVE REFERENCES			
2.1	Standards			
2.2	Definitions and Abbreviations			
2.2.1	<i>Definitions</i>			
2.2.2	<i>Abbreviations</i>			
2.3	Drawings			
3	REQUIREMENTS			
3.1	General	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.2	Climatic Conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.3	Construction Requirements			
3.3.1	General	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.3.2	Display	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.3.3	Test Facilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.3.4	Meter Circuits and Terminations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.3.5	Marking Requirements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.3.6	Sealing Requirements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.4	Electrical Requirements			
3.4.1	Input Currents and Voltages	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.4.2	Electrical Parameters	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.5	Functional Requirements			
3.5.1	Installation Type and Class	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.5.2	Energy Measurements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.5.3	Demand Measurements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.5.4	Other Requirements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.5.5	Data Storage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.5.6	Internal Clock	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.5.7	Programmability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.3.8	Firmware	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.5.9	Communications	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.5.10	Security	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

CLAUSE NUMBER		YES	NO	ATT.
3.6	Calibration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.7	Accuracy Tests	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.8	Spares	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.	STORAGE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.	RELIABILITY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.	SAFETY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.	ENVIRONMENTAL CONDITIONS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.	INFORMATION TO BE PROVIDED WITH OFFER	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.	INFORMATION TO BE SUPPLIED FOLLOWING ACCEPTANCE OF PROPOSAL	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.	CHANGE OF DESIGN	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.	TESTS			
11.1	Test Requirements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.1.1	Type Tests	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.	DOCUMENTATION AND SAMPLES/QUALITY MANAGEMENT			
12.1	Type Test Certificates/Reports	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.2	Samples	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.3	Quality Management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13	MANUFACTURING FACILITY AUDIT			
14	ORDERING	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

APPENDIX E SCHEDULE B: METER DESCRIPTION

ITEM	DESCRIPTION	DISTRIBUTION STANDARD DRAWING
1	1Ø LV: LV connected Single Phase Meters	
1.1	Short Description: Technical Description:	
2	3Ø LV: LV connected Polyphase (3 phase) Meters	
2.1	Short Description: Technical Description:	
3	3Ø LV CT: LV Current Transformer connected Meters	
3.1	Short Description: Technical Description:	
4	3Ø HV CTVT: HV Current and Voltage Transformer connected Meters	
4.1	Short Description: Technical Description:	