

Amendment Slip "General Amendments to CEB Specification"  
Effective from 05-10-2005

**REVISED TEXT**

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1. Tender form, Schedule of Prices, Letter of Authorization, Power of Attorney documents shall be signed in Blue Ink. Name of the persons signing shall be clearly indicated and their official stamp has to be put in.
2. Bidders shall include with their offer the Type Tests Report/Certificates in accordance with the Standard specified, obtained from an accredited independent test laboratory acceptable to the CEB.

Proof of accreditation by a national/international authority shall also be forwarded with the offer.

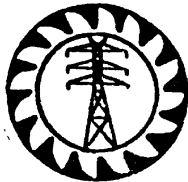
Test Reports shall be complete including all the pages as issued by the Testing Authority. Parts of the Test Report shall not be acceptable.

035 : 2005

**CEB  
STANDARD**

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**SINGLE PHASE HOUSE SERVICE METERS**



**CEYLON ELECTRICITY BOARD  
SRI LANKA**

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*Specification*

*for*

**SINGLE PHASE HOUSE SERVICE METERS**

**CEB Standard 035 : 2005**

**CEYLON ELECTRICITY BOARD**

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**SPECIFICATION FOR SINGLE PHASE HOUSE SERVICE METERS****1.0 SCOPE**

This Specification covers the general requirements of design, manufacture, testing, supply and delivery of Single Phase House Service Meters.

## 2.0 SYSTEM PARAMETERS

a)	System Nominal Voltage	-	230 /400 V a.c.
b)	System Highest Voltage (single phase)	-	240 V a.c.
c)	System Frequency	-	50 Hz
d)	Method of Earthing	-	Neutral effectively earthed at Substation
e)	System Fault Level	-	25 kA

## 3.0 SERVICE CONDITIONS

a)	Maximum ambient temperature	-	40 <sup>0</sup> C
b)	Maximum relative humidity	-	90%
c)	Annual average ambient temperature	-	30 <sup>0</sup> C
d)	Environmental condition	-	Humid tropical climate with heavily polluted atmosphere
e)	Highest altitude	-	From MSL to 2000 M above MSL
f)	Isokeraunic (Thunder day) level	-	90 days

## 4.0 APPLICABLE STANDARDS

The items and components supplied shall be in accordance with the latest edition of the Standard specified below and amendments thereof. However the CEB Specification shall supersede these Standards in the event there is a discrepancy.

a)	IEC. 521 (1988)	-	Class 0.5, 1 and 2 alternating current watt hour meters.
b)	IEC. 514 (1975)	-	Acceptance inspection of Class 2 alternating-current Watt-hour meters
c)	BSEN 62052-11:2003	-	Electricity Metering Equipment (AC)-General Requirements, tests and test conditions
d)	ISO/IEC : 17025:2005	-	General requirements for the competence of testing and calibration laboratories

## 5.0 BASIC DESIGN FEATURES

The meters shall be 240 Volt, 50 Hertz, Single Phase, 2 Wire, integrating Kilo Watt-hour Meters complying with Standards stipulated in Clause 4.0 above.

- 5.1 The meters shall be of accuracy Class 2 and shall be suitable for use in a tropical climate and service conditions as stipulated in Clause 3.0
- 5.2 Power loss shall be less than 1 Watt
- 5.3 The meter base, terminal compartment, meter cover and terminal cover shall be made of non-hygroscopic non-ignitable insulating material with good surface finish. The meter cover shall be made of clear polycarbonate or transparent thermoplastic material and shall be one integral unit. The terminal covers shall be of extended type with provision to seal the meter cover and terminal cover separately.

- 5.4 The meter cover shall have a continuous gasket between the base and the cover (fitted in a recessed groove in the cover) to prevent entry of dust, water, insect etc. so as to achieve degree of protection not less than IP52 as per IEC 529. Gasket shall not be detached when meter cover is removed from the base.

Design of the Meter shall be such that it shall not be possible to remove the meter cover without removing the terminal cover.

Fool proof seals have to be provided to the meter cover by the manufacturer.

- 5.5 The low load, power factor and full load adjustments shall be indelibly marked and easy access to the same shall be available. These shall be stable, sensitive and easily accessible and shall not comprise of parts, which are fragile or complicate. The adjustments devices would preferably be by means of micro screws. The rotation direction of the adjustment devices shall be clearly indicated. Full load adjustment shall be independent from low load adjustment.
- 5.6 The voltage and current coils shall be connected together by an easily detachable link which shall be enclosed by the meter cover and not by the terminal cover. Once detached sufficient clearance shall be available to prevent short-circuiting when testing. With link detached, the voltage coil terminals shall have suitable means for independent test voltage leads to be connected to them.
- 5.7 The voltage coil shall be designed to withstand high voltages without open circuiting, The coil shall be fully encapsulated to prevent ingress of moisture and marked with its rated voltage. The method of encapsulation shall be described in detail. The impulse (1.2/ 50 $\mu$ s) and the power frequency withstand voltages of the meter shall not be less than 10kV peak and 2kV rms respectively
- 5.8 The rotor upper bearings shall be guided by stainless steel pin with a non-lubricated bearing bush mounted to the spindle.
- Lower bearing shall be magnetic suspension type
- 5.9 The upper surface of the rotor disc shall have black coloured markings dividing the circumference into 200 divisions. The markings at each 1/100th of the circumference shall be longer than those between. Markings at each 1/10th of the circumference shall be still longer and shall be numbered from 0 to 9. These markings shall be visible through the name plate window to facilitate manual calibration.
- 5.10 Rotor disc shall be of light weight electrolytic Aluminium metal die-cast to the spindle.
- 5.11 Breaking magnet shall be positioned to the frame rigidly to prevent any movement. The magnet shall be temperature compensated with respect to wide range of temperatures and shall have high resistance to de-magnetization and low temperature coefficient. The details of the method of temperature compensation shall be fully described
- 5.12 The edge of the rotor nearest an observer viewing a meter from the front shall move from left to right for positive registration. The direction of rotation shall be marked clearly by a visible arrow. The edge of the rotor disc shall carry an easily visible mark with a width of between 1/20 and 1/30 of the circumference of the disc to facilitate testing. This mark shall either start from the marking for number 0 or end at the marking for number 0 stated in clause 5.8 above.
- 5.13 With no current in the current circuit, the rotor shall not make one complete revolution at any voltage between 80% and 110% of the rated voltage. The meters shall be fitted with anti-reverse device.

- 5.14 All terminals, screws and nuts shall be nickel plated brass to provide high resistance to corrosion.
- 5.15 The registers shall be of large jumping figure cyclometer type. The dimensions of figures shall not be less than 6mm (Height) and 4mm (Width). There shall be six number drums in the register and numbering shall be done as specified in IEC 521. The limits of variation in percentage error due to mechanical load of the register shall not be more than one (1).
- 5.16 The meter constant shall not be more than thousand revolutions per kWh and the meter constant shall be indelibly marked on the body of the register.
- 5.17 All components (except terminals) shall be mounted on single rigid Aluminium die-cast frame to achieve long-term calibration stability. The spacing of meter fixing holes, terminal arrangement, the terminal bore sizes and the wiring arrangement shall be as indicated in the Drawing No. DS&S /2001/35 (Annex A) . The terminals and screws shall have two M6 screws for effectively clamping the cable.

## 6.0 QUALITY ASSURANCE

6.1 The manufacturer shall possess ISO 9001 : 2000 Quality Assurance Certification for the design, manufacture and testing of Single Phase kWh meters. In the event the meters are manufactured in a plant under the licence of the manufacturer, the manufacturing plant shall possess ISO 9001 : 2000 Quality Assurance Certificate for manufacturing and testing of Single Phase kWh Meters. The Bidder shall furnish a copy of the ISO Certificate certified as true copy of the original from the manufacturers, along with the offer.

If the following items are purchased from other manufacturers, they shall have ISO 9001 Quality Assurance Certification for the manufacture of same for the plant where the manufacture is done. The Bidder shall furnish a copies of the ISO Certificates certified as true copies of the originals from the manufacturers, along with the offer

- i) Permanent magnet
- ii) Magnetic bearing
- iii) Register

6.2 Manufacturer shall have in-house meter testing facility comply with the requirements of ISO/IEC : 17025 : 2005. Proof document shall be submitted to prove this accreditation.

## 7.0 PROOF OF ABILITY

### 7.1 Manufacturing Experience.

7.1.1 The Manufacturer shall have at least twenty years (20) of experience in the manufacture of House Service Meters. Documentary proof for the manufacturing experience shall be provided. In addition, sufficient documentary evidence such as name of purchaser, year of sale, quantity sold, purchase orders, model numbers of the meter sold etc. for the last 15 years shall be furnished with the offer.

7.1.2 The meter manufacturer shall guarantee that the offered meters will operate within the stipulated error limits for a period of 15 years without re-calibration.

## 7.2 SUPPLIMETARY QUALIFICATIONS

The following supplementary qualifications will be considered in the evaluation of bids. Hence if the

equipment offered meets any one or more of the following criteria the bidder shall further qualify for the selection.

### 7.2.1 Certificates for Service life

“Ofgem” certification or other certification issued by an electricity regulating institution certifying a minimum service life of 15 years, (certified copies of the certificates shall be attached to prove this.)

### 7.2.2 Performance Reports/Certificates

7.2.2.1 Bidders may furnish performance reports/certificates obtained from electricity supply authorities outside the country of manufacture to whom the bidder has supplied meters of similar type/model during the last ten years.

7.2.2.2 The above certificates/reports shall indicate the name of purchaser, “model” of the meter, year of purchase, quantity purchased, and the performance of the meters based on the field experience or field studies.

7.2.2.3 The purchaser reserves the right to communicate with electricity supply authorities who has issued performance certificates with regard to the performance of the meters and the authenticity of the performance certificate issued by them. The contact person and contact details of those utilities such as FAX/Telephone numbers etc shall be furnished by the Bidder in his offer.

## 8.0 Nameplate Markings

8.1 The Nameplate of Meters shall bear all the information stipulated in clause 7.1 of IEC 521. The marking shall be indelible, distinct and readable from outside the meter.

8.2 The words "Property of the Ceylon Electricity Board" shall be engraved on the nameplate. 8.3. A serial number (which will be indicated at the time of placing an order) shall also be engraved on the nameplate.

## 9.0 Tests

### 9.1 Routine Tests

The following routine tests as per BSEN / IEC 521 shall be carried out on all the meters ordered;

- a) 400% basic current, reference voltage and at unity power factor.
- b) 400% basic current, reference voltage and at 0.5 lagging power factor.
- c) 200% basic current, reference voltage and at unity power factor.
- d) 200% basic current, reference voltage and at 0.5 lagging power factor.
- e) 5% basic current, reference voltage and at unity power factor
- f) Register test
- g) Starting current test
- h) Running with no load test
- i) Verifying minimum range of further adjustment

### 9.2 Type Test Certificates

Type test reports for the test listed in below shall be obtained from one of the following Internationally Recognized Institutions / National Meteorological Laboratories. Each page of the test report shall be certified and stamped by the Testing Authority. CEB shall request Original Type Test Reports/Test Certificates before the issue of award letter for perusal if considered necessary.

- i) **United Kingdom** - ASTA Certification Services – (ASTA) or National Metrological Laboratory in UK, accredited to Western European Legal Metrology Corporation (WELMEC).
- ii) **Italy** - Centro Elettrotecnico Sperimentale Italiano S.P.A. (CESI) or National

Metrological Laboratory in Italy accredited to Western European Legal Metrology Corporation (WELMEC).

- iii) **France** - Ensemble Des Stations D'Essais a' Grande Puissance Francaises (ESEF) or National Metrological Laboratory in France accredited to Western European Legal Metrology Corporation (WELMEC)
- iv) **Netherlands** – B.V. KEMA (KEMA) or National Metrological Laboratory in Netherlands accredited to Western European Legal Metrology Corporation (WELMEC)
- v) **Japan** – National Metrological Laboratory in Japan accredited to National Laboratory Accreditation System in Japan
- vi) **USA** – National Metrological Laboratory accredited to American Association for Laboratory Accreditation.
- vii) **Australia** – National Metrological Laboratory accredited to National Association of Testing Authority (NATA)
- viii) **India** – Central Power Research Institute (CPRI)

### 9.3 Type Tests

The Type Tests shall be carried out at a reference voltage 240 volts and at a reference frequency of 50 hz.

- a) Mechanical Requirements as per BS EN / IEC 521 and as per Clause 5.0 of this standard.
  - i) Mechanical Requirements and tests as per Clause 5 of BSEN 62052-11:2003 for Electricity Metering Equipment (AC)-General Requirements, tests and tests conditions
  - ii) Terminal block – Material test as per ISO 75
  - iii) Non-flammability – Glow wire test as per IEC 695-2-1
- b) Electrical Requirements as per BS EN / IEC 521 and as per Clause 5.0 of this Standard.
  - i) Power Losses
    - 1. Voltage Circuits
    - 2. Current Circuits
  - ii) Heating
  - iii) Di-electric properties
    - 1. Impulse withstand voltage test - as per Clause 5.6 of this Specification.
    - 2. Power frequency withstand Voltage tests. - - do -
    - 3. Insulation resistance
- c) Accuracy ( including change of error due to variation of voltage, ambient temperature, frequency, level, stray field etc and Mechanical load on register as per Clause 5.11 of this Standard.
- d) Starting and running no-load
- e) Adjustment
- f) Mean temperature coefficient
- g) Effect of high temperature Test as per Clause 9.4 of this Standard

The test certificates shall clearly identify the kWh meter tested, showing the following;

- i) Manufacturer's identity,
- ii) Model / type number,
- iii) Type of register,
- iv) Type of rotor bearing, break magnet and other basic parameters,

#### 9.4 Additional Type Test

To verify the effect of high temperature the meters shall conform to the test stipulated below.

Subject the meter to 60°C for 24h while energizing the voltage circuit at reference voltage and current circuit at zero current and stabilize at reference condition for 4 hours. The variation in percentage error shall not exceed;

- 1.0 when the meter operates on  $0.05I_b$  at unity power factor,
  - 0.5 when the meter operates on  $I_b$  at unity power factor
- when the meter operates on  $I_b$  at 0.5 lagging.  
(where  $I_b$  = base current)

#### 10 Warranty

Manufacturer shall provide 15 year warranty period from the date of delivery to the purchaser's stores. Within this period manufacturer shall replace or make good the meters found defective, free of charge. Agreement to be signed with the manufacturer after award and the format is given in Annex C.

CEB shall not remove the meter cover for any purpose such that CEB has the right to claim under warranty in the event of any defect in the meter. Manufacturer shall honour the warranty agreement accordingly.

#### 11 Packing

Each meter shall be individually packed using blister wrapping to prevent damage during transport and handling. A minimum of ten meters shall be packed in cardboard boxes and the boxes shall indicate the Type, Rating and Serial No. of the item. All packing material shall be of bio-degradable type

#### 12.0 INFORMATION TO BE SUPPLIED WITH THE OFFER

##### 12.1 The following shall be furnished with the offer.

- a) Catalogues describing the meter and indicating the type and model number.
- b) Literature describing the operational features of the meter.
- c) Constructional features, materials used for components and relevant technical literature for the following shall be furnished
  - i) Permanent magnet
  - ii) Magnetic bearing
  - iii) Register
  - iv) Voltage coil
- d) Full details of the method of encapsulation of voltage coil and winding details of current

and voltage coils eg. Type of frame used, Insulation of wires, etc.

- e) Full details of temperature compensation methods used in magnets, giving details of thermal compensating device, temperature ranges etc.
- f) Construction details of upper and lower bearings.
- g) Complete dimensional drawing.
- h) List of Electricity Supply Authorities who purchased similar meters during last **20** years. Details of such purchases including names of purchaser, year of sale, quantity sold, purchase orders/tender Nos. and model numbers of the meters sold etc. shall also be furnished.
- i) Manufacturing Experience stipulated in **clause 7.1**. Documents shall be furnished to prove the manufacturing experience.
- j) The details of the information that will be marked on the Name Plate of the Meter.
- k) Completed Schedule of Particulars (ANNEX - B).
- l) Quality Assurance Certification conform to ISO 9001 as per Clause 6.0.
- m) Proposed format of agreement shall be submitted along with the offer

### 13.0 SAMPLE

Two samples of each rating with manufacturer's seals shall be furnished with the offer. Unsealed sample meters shall not be accepted.

### 14.0 INSPECTION AND TESTING

#### 14.1 Inspection

Selected bidder shall make necessary arrangements for inspection of each consignment of meters by an Engineer appointed by the purchaser and to carry the tests as stipulated in Clause 10.2 in his presence to verify the accuracy and performance of the meters offered is as per this specification. If the meters fail to meet the requirements of this specification, then the total quantity under the tender shall be rejected.

Routine Test reports (as per Clause 9.1) of the meters offered for inspection shall also be furnished for the observation of the inspector.

#### 14.2 Acceptance / Sample Tests

- a) Clearance and creepage distance
- b) Power loss on –
  - i) Voltage circuit
  - ii) Current circuit
- c) Apparent power loss
- d) Heating

- e) Dielectric qualities
- f) A C Voltage
- g) Flammability
- h) Variation due to self-heating
- i) Percentage error limits

### 14.3 Sampling method

The sampling method shall be as stipulated in IEC 514.

### 15.0 ANNEX

- A - Drawing No. DS&S /2001/035
- B - Schedule of Particulars to be filled by the Bidder
- C - Format for Warranty

#### ANNEX - A

		mm
D	Vertical distance between centre of top fixing hole and centerline of bottom fixing holes	138.1 to 141.3
E	Vertical distance from centreline of bottom fixing holes to lower face of terminal a block	23.8 to 27.0
F	Distance between centres of bottom fixing holes and centreline of meter	51.6 to 53.2
G	From centerlines of main terminal holes 2 and 3 to centerlines of meter	10.3 to 11.9
J	From centerlines of main terminal holes 1 and 4 to centerlines of meter	34.1 to 35.7
K	Diameter of bore in terminal	8.0 to 8.2
L	Length of parallel portion of bore in terminal plus depth of any lead-in from lower face of terminal block	28.5 (min.)
M	From front of meter board to centreline of main terminal holes	17.4 to 20.7
N	Diameter of fixing holes	5.1 to 5.6
T	From centreline of meter to centreline of auxiliary terminal of a two-rate meter	22.2 to 23.8
W	From centreline of bottom fixing holes to centreline of lower pinch screws	12.5 to 15.0
Y	From centreline of lower pinch screws to centreline of upper pinch screws	7.5 to 10.5

**NOTE :** ? For the purpose of estimating the tolerances the datum line for the dimensions D, E, F, G, J shall be:  
 vertical datum : centreline of meter  
 horizontal datum : centreline of bottom fixing holes

## ANNEX - B

**SCHEDULE OF GUARANTEED TECHNICAL PARTICULARS**

(This schedule shall be duly filled by the Manufacturer)

			5/20	10/40	20/80
1)	Name of manufacturer and country of origin	-			
2)	Type and Catalogue number/ Model number	-			
3)	Accuracy Class	-			
4)	Applicable Standards	-			
5)	Reference / Rated				
	i) Voltage	V			
	ii) Frequency	Hz			
6)	Rated maximum Current $I_{max}$	A			
7)	Basic Current $I_b$	A			
8)	Starting Current of Meter (at unity power factor)	- % of rated current			
9)	Creeping voltage	% of rated voltage			
10)	Meter constant	Rev/kWh			
11)	Basic Speed	Rev./min			
12)	Basic Torque	gm/cm			

- 13) Rated Maximum Load Speed at unity PF Rev/min-
- 14) Rated maximum load torque gm/cm -
- 15) Mean temperature coefficient
- i) From  $0.1I_b$  To  $I_{max}$  at unity PF  $\%/^{\circ}\text{C}$  -
- ii) From  $0.1I_b$  To  $I_{max}$  at 0.5 lagging  $\%/^{\circ}\text{C}$  -
- 16) Break magnet system
- i) Name of the manufacturer -
- ii) Type (two pole/four pole/six pole/eight pole) -
- iii) How long the type of break magnet in the offered meter has been in use Years -
- v) Whether the ISO 9001 certificates are furnished (as per Clause 6.0) Yes/No -
- 17) Rotor Bearings
- i) Name of manufacturer -
- ii) Type ( Jewel / magnetic) -
- iii) How long the type of rotor bearing in the offered meter has been in use Years -
- vi) Whether the ISO 9001 certificate furnished Yes/No -
- 18) Rotor weight grams -
- 19) Energy Register
- i) Name of manufacturer -
- ii) Type (Dial type, Cyclometer/Jumping cyclometer) -
- iii) How long the type of register in the offered meter has been in use Years -
- iv) No. of digits -
- v) Digit size mm X mm -
- vi) Whether the ISO 9001 certificate furnished Yes/No -
- 20) Material of
- n) Meter base -
- ii) Terminal base -
- iii) Meter cover -
- iv) Terminal cover -
- v) cover screws and the type -
- 21) Whether the gasket is
- i) provided between the meter base & cover Yes/No -
- ii) continuous Yes/No -
- iii) fitted in a recessed groove in the cover Yes/No -
- 22) Material of gasket -
- 23) Applicable IP Code IP -  
(Degrees of protection)
- 24) Terminal -

	i)	Material	-	-
	ii)	Bore diameter	-	-
	iii)	Bore length	-	-
	iv)	Number of screws provided	-	-
	v)	Size of screws	-	-
	vi)	Material of screws	-	-
25)		Material of the meter frame	-	-
		Whether the meter frame is single rigid type	Yes/No	-
26)		Whether the meter is fully tropicalised	Yes/No	-
27)		Number of holes provided for mounting the meter	-	-
28)		Vertical distance between top fixing holes and centre line of bottom fixing holes	mm	-
29)		Distance between centres of bottom fixing holes and centre line of meter	mm	-
30)		Whether the type test certificates as per Clause 9.2 and 9.3 are furnished	Yes/No	-
31)		Limit of Errors		
	i)	0.05 $I_b$ at unity PF	-	-
	ii)	from 0.1 $I_b$ to $I_{max}$ at unity PF	-	-
	iii)	0.1 $I_b$ 0.5 lagging	-	-
		0.8 leading	-	-
	iv)	from 0.2 $I_b$ to $I_{max}$	-	-
		0.5 lagging	-	-
		0.8 leading	-	-
32)		Insulation Level		
	i)	Power frequency withstand voltage for 1 min.	kV	-
	ii)	Lightning impulse withstand voltage (Peak)	KV	-
	iii)	Insulation resistance Megaohms at 500V DC	-	-
33)		Power Losses		
	i)	Voltage circuit at reference voltage		
	a)	Active	W	-
	b)	Apparent	VA	-
	ii)	Current circuits at basic current (Apparent)	VA	-
34)		Temperature rise		
	i)	Winding	$^{\circ}C$	-
	ii)	External surfaces of the case	$^{\circ}C$	-
35)		Whether the Effect of higher Temperature Test as per Clause 9.4 is furnished	Yes/No	-
36)		Whether the sample tests as per clause 14.2 will be carried out by the Bidder during inspection	Yes/No	-
		If Yes, Indicate the place of testing	-	-
37)		Number of meters (similar type/model) sold up to now	Nos.	-

- |     |   |          |
|-----|---|----------|
| 38) | How long the model offered has been under production  | Yes/No - |
| 39) | Single phase meter manufacturing capacity per month   | Nos. -   |
| 40) | Single phase meter calibration facility<br>Number of single phase meter calibration Benched available at the place of manufacture | Nos. -   |
|     | Number of single phase meters that could be calibrated by each bench/per day  | Nos. -   |
| 41) | Whether the document to prove the manufacturing experience as per Clause 7.1.1 is furnished                                       | Yes/No - |
| 42) | Whether the Quality Assurance Certification conforming to ISO 9001 for the manufacture of the following are furnished             |          |
|     | i) kWh Meter  | Yes/No - |
|     | ii) Permanent magnet  | Yes/No - |
|     | iii) Magnetic bearing   | Yes/No - |
|     | iv) Register  | Yes/No - |
| 43) | Certification period of the meter offered (as per Clause 7.1.2)   | Years -  |
|     | Whether documentary evidence furnished to prove this  | Yes/No - |
| 44) | Recommended re- calibration interval  | Years -  |
| 45) | Guaranteed Life Span of the offered meter   | Years -  |
| 46) | Type of packing material  | -        |
| 47) | Whether the packing material is bio - degradable  | yes/no - |

**I/We certify that the above data are true and correct.**

**SEAL AND SIGNATURE OF THE BIDDER / MANUFACTURER**

single phase kwhmeter

**ANNEX C**

**Warranty for  
Ceylon Electricity Board**

Tender No.

..... (Manufacturer) shall make good by repair or, at our option by replacement, defects which, under proper use and in accordance with any instructions issued by us, as appeared in the contract of our supply or manufacture within a period of not more than One Hundred and eighty (180) months after the original FOB dispatch date provided that :-

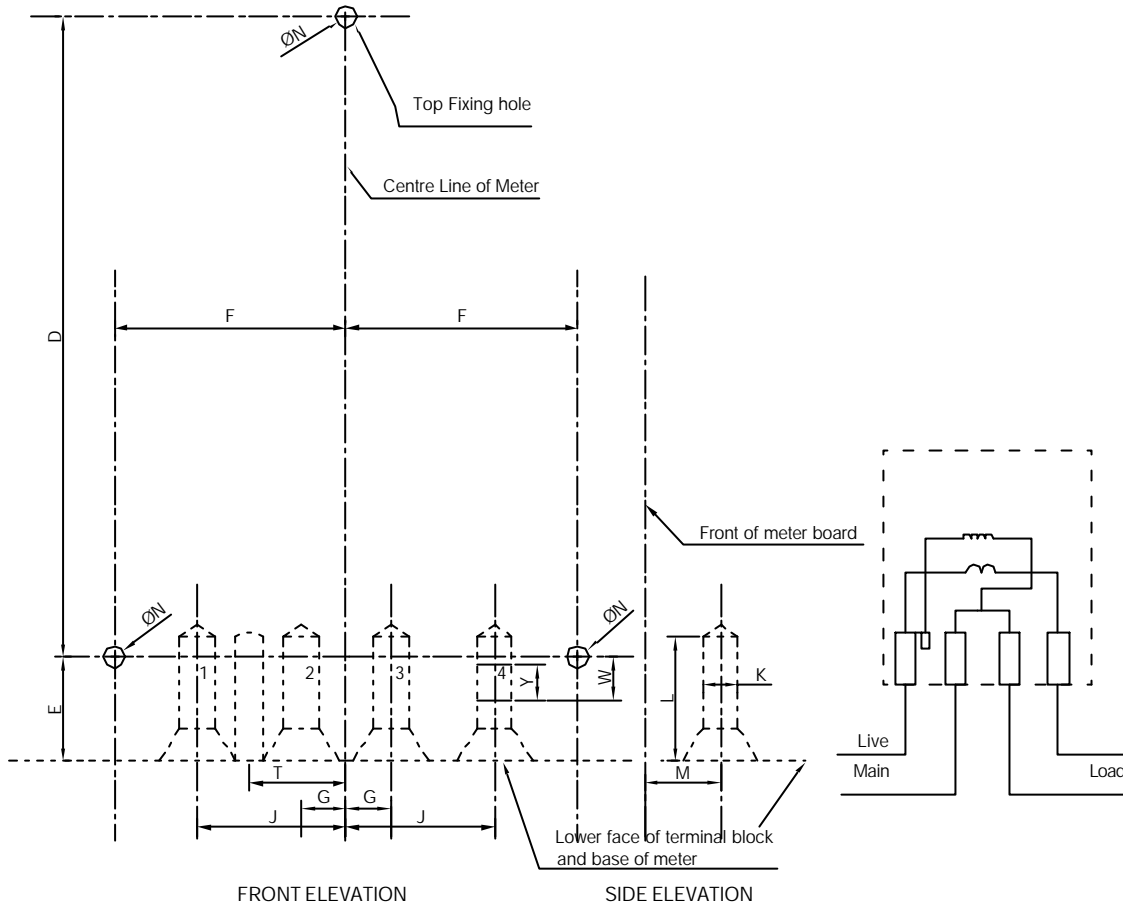
- a) All meters supplied by ..... (Manufacturer) is handled, installed and commissioned in a manner as agreed to by the Manufacturer and the Ceylon Electricity Board and operated at the designed normal operating conditions at all times for which it was intended.
- b) We are notified of the alleged defect first coming to the purchaser's notice and within the warranty period.
- c) The defective meter(s) is/are returned promptly to our Agent in Sri Lanka free of charge if we so require and we shall return new or repaired meter(s) free of charge to the original contract delivery point unless otherwise arranged.
- d) Any unauthorized handling; repairs or alterations to the meter(s) shall invalidate this warranty.

If it is found that the meter has been mishandled, neglected and / or modified in any way during the storage period, the warranty in general will become null and void.

The warranty applied only to goods and services carried out by (Manufacturer) or with (Manufacturer) approval.

Yours sincerely,

(Manufacturer)




Spacing of fixing holes and terminals for single - phase, two wire meters

Diagram of connections for a single phase,two wire, single rate meter

D	Vertical distance between centre of top fixing hole and centreline of bottom fixing holes	138.1 to 141.3
E	Vertical distance from centreline of bottom fixing holes to lower face of terminal block	23.8 to 27.0
F	Distance between centre of bottom fixing holes and centreline of meter	51.6 to 53.2
G	From centrelines of main terminal holes 2 and 3 to centerlines of meter	10.3 to 11.9
J	From centrelines of main terminal holes 1 and 4 to centerlines of meter	34.1 to 35.7
K	Diameter of bore in terminal	8.0 to 8.2
L	Length of parallel portion of bore in terminal plus depth of any lead-in from lower face of terminal block	28.5 ( min. )
M	From front of meter board to centreline of main terminal holes	17.4 to 20.7
N	Diameter of fixing holes	5.1 to 5.6
T	From centreline of meter to centerline of auxiliary terminal of a two-rate meter	22.2 to 23.8
W	from centreline of bottom fixing holes to centreline of lower pinch screws	12.5 to 15.0
Y	from centreline of lower pinch screws to centreline of upper pinch screws	7.5 to 10.5

**NOTE :** For the purpose of estimating the tolerances the datum line for the dimensions D, E, F, G, J shall be  
 Vertical Datum : centreline of meter  
 Horizontal Datum : centreline of bottom fixing holes

ALL DIMENSIONS ARE IN mm.

 <b>CEYLON ELECTRICITY BOARD</b>  DIST. PLANNING BRANCH	<b>DISTRIBUTION STANDARDS &amp; SPECIFICATION</b>	SCALE : NOT TO SCALE
	<b>SINGLE PHASE HOUSE SERVICE METERS</b>	REDRAWN : LALANI
	<u>NOTE</u>	DATE : April 2001
	Extract from Figure 1 and Table 20 of BS 5685 : 1979	DRG. NO : DS&S/2001/035
		CAD NO :