

GOVERNMENT OF ARUNACHAL PRADESH
DEPARTMENT OF POWER

BID DOCUMENT

PART-III

(Volume-3/3)

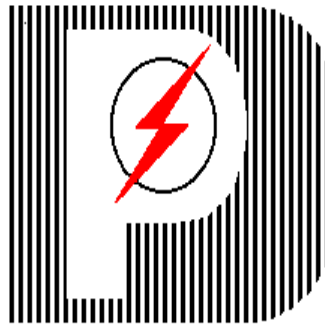
GUARANTEED TECHNICAL PARTICULARS

OF

**AUTOMATION OF ELECTRIC ENERGY METERING AND BILLING
WITH AMR AND PRE-PAID METERS IN CAPITAL COMPLEX**

UNDER

**DEPARTMENT OF POWER
GOVERNMENT OF ARUNACHAL PRADESH**



SPECIFICATION NO. DOP: AP/WEZ/CAPITAL COMPLEX/PREPAID-AMR METERING

ESTIMATED COST: RS. 8433.62 LAKHS

**CAPITAL ELECTRICAL DIVISION
ITANAGAR**

**GURANTEED TECHNICAL
PARTICULARS
(GTP)**

BID DOCUMENT

Part-III **(Volume-3/3)**

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**GUARANTEED TECHNICAL PARTICULARS FOR
SINGLE PHASE AND THREE PHASE PRE-PAID METER BOX**

Sr. No.	Particulars	Bidder's Offer
1.	Material of meter box	
2.	Colour of Box i. Cover ii. Base	
3.	Dimensions of box (L x W x H)	
4.	Clarence from Meter surface : Left , Right side : Bottom (from terminals) : Front Back : Top : (General tolerance \pm 5 mm)	
5.	Thickness of Meter box	
6.	Sealing arrangement on	
7.	Inlet & Outlets with Engineering plastic Glands	
8.	Suitable for outdoor installation (a) On rain with high speed wind (b) On humidity. (c) On Sun rays	

Note: The meter box size should be bare minimum so that meter can be installed in small spaces particularly in multistoried buildings and commercial shops and complexes.

Date: (Signature).....

Place: (Printed Name).....

(Designation).....

(Common Seal).....

GUARANTEED TECHNICAL PARTICULARS FOR 3 PHASE 4 WIRE CT PT OPERATED AMR ENERGY METER FOR HT CONSUMER

Sr. No.	Particulars	Bidder's Offer
1.	Name of Manufacturer.	
2.	Type of Meter/Model	
3.	Class of Accuracy/Interface	
4.	Display Parameters	
5.	P.F. Range	
6.	Basic Current (Ib)	
7.	Maximum Current	
8.	Minimum starting current	
9.	Rated Voltage	
10.	Variation of Voltage at which metre functions normally	
11.	Rated Frequency	
12.	Power Loss in Voltage & Current circuits	
13.	Dynamic Range	
14.	MD reset Provisions	
15.	No. of digits of display and height of character	
16.	Non volatile memory	
17.	Principle of operation	
18.	MD Integration Period	
19.	Weight of meter	
20.	Dimensions	
21.	Warranty	
22.	Outline drawing & Leaflets	
23.	a) Remote meter-readout facility	
	b) Communication protocol used	
	c) Sealing provision for meter & optical port.	
	d) Baud rate of data transmission.	
	e) Required software to be resident in CMRI and BCS.	
	f) Ultrasonic welding of body	
	g) Manufacturer's Seal provided	

Sr. No.	Particulars	Bidder's Offer
	e) Required software to be resident in CMRI and BCS.	
	f) Ultrasonic welding of body	
	g) Manufacturer's Seal provided	
24.	Base computer Software.	
25.	Type Test Certificates	
26.	Time of Day Zones (Selectable)	
27.	Whether meter measures both fundamental & Harmonic Energy	
28.	Real Time Clock Accuracy	
29.	Anti Tamper Features	
30.	Data retention by NVM without battery back up and unpowered condition	
31.	BIS License	
31.1	BIS license No. Date with its validity for ISI certification mark on offered meter.	
31.2	Details of meter design for which above BIS certification has been obtained:	
	i) Ratio of Ib to I _{max}	
	ii) Material of meter body	
	iii) Grade of printed circuit board material	
	iv) Type of assembly of component used (SMT)	
	v) Meter Constant (imp/kWH)	
	vi) Auxiliary power circuit (with PT or PT less)	
	vii) Accuracy Class	
32.	ISO accreditation No. & Date with its validity	

Date: (Signature).....

Place: (Printed Name).....

(Designation).....

(Common Seal).....

**GUARANTEED TECHNICAL PARTICULARS OF AMR METER BOX
FOR HT CONSUMER WITH MODEM PROVISION**

Sr. No.	Particulars	Bidder's Offer
1.	Manufacturer's Name	
2.	Material used for Box (Lxwxh)	
3.	Manufacturing Technology	
4.	Dimensions of box (Lxwxh)	
5.	Thickness (mm)	
6.	Color	
7.	Viewing Window	
8.	Material	
9.	Dimensions	
10.	Seal arrangement to window	
11.	No. of Hinges	
12.	Handle Provision	
13.	Earthing Provision	
14.	Sealing arrangement	
15.	Inlet and Outlets	
16.	Gasket	
17.	Gasket provision for door and window	
18.	Material of the gasket	
19.	Suitable for outdoor installation	
	a. On rain with high speed wind	
	b. On Hummidity	
	c. On sun rays	

Date: (Signature).....

Place: (Printed Name).....

(Designation).....

(Common Seal).....

**GUARANTEED TECHNICAL PARTICULARS FOR 3 PHASE 4 WIRE LT CT OPERATED AMR
ENERGY METER FOR LT BULK CONSUMER**

Sr. No.	Particulars	Bidder's Offer
1.	Name of Manufacturer.	
2.	Type of Meter/Model	
3.	Class of Accuracy/Interface	
4.	Display Parameters	
5.	P.F. Range	
6.	Basic Current (I _b)	
7.	Maximum Current	
8.	Minimum starting current	
9.	Rated Voltage	
10.	Variation of Voltage at which metre functions normally	
11.	Rated Frequency	
12.	Power Loss in Voltage & Current circuits	
13.	Dynamic Range	
14.	MD reset Provisions	
15.	No. of digits of display and height of character	
16.	Non volatile memory	
17.	Principle of operation	
18.	MD Integration Period	
19.	Weight of meter	
20.	Dimensions	
21.	Outline drawing & Leaflets	
22.	a) Remote meter-readout facility	
	b) Communication protocol used	
	c) Sealing provision for meter & optical port.	
	d) Baud rate of data transmission.	
	e) Required software to be resident in CMRI and BCS.	
	f) Ultrasonic welding of body	
	g) Manufacturer's Seal provided	

Sr. No.	Particulars	Bidder's Offer
23.	Base computer Software.	
24.	Type Test Certificates	
25.	Time of Day Zones (Selectable)	
26.	Whether meter measures both fundamental & Harmonic Energy	
27.	Real Time Clock Accuracy	
28.	Anti Tamper Features	
29.	Data retention by NVM without battery back up and unpowered condition	
30.	BIS License	
30.1	BIS license No. Date with its validity for ISI certification mark on offered meter.	
30.2	Details of meter design for which above BIS certification has been obtained:	
i)	Ratio of Ib to I _{max}	
ii)	Material of meter body	
iii)	Grade of printed circuit board material	
iv)	Type of assembly of component used (SMT)	
v)	Meter Constant (imp/kWH)	
vi)	Auxiliary power circuit (with PT or PT less)	
vii)	Accuracy Class	
31.	ISO accreditation No. & Date with its validity	
32.	Other parameters/features not covered in the above GTP	

Date: (Signature).....

Place: (Printed Name).....

(Designation).....

(Common Seal).....

**GUARANTEED TECHNICAL PARTICULARS OF LT CT OPERATED METER BOX FOR
LT BULK CONSUMER WITH MODEM PROVISION**

Sr. No.	Particulars	Bidder's Offer
1.	Material of the Meter Box	
2.	Grade of material	
3.	Colour of the Box	
4.	Dimension of the Box (L x W x H)	
5.	Thickness of Box	
6.	Clearance between meter and meter box	
	a. Top	
	b. Both sides	
7.	Hinges provided	
	a. For Meter chamber door	
	b. For CTs chamber door	
8.	Viewing Window	
	a. Material	
	b. Dimensions	
9.	Sealing arrangement	
10	a. Whether inlet and outlet arrangement for service cable provided. Please mention dimension of holes?	
	b. Whether for incoming and outgoing cables provisions of HDPE glands of suitable size have been made. Please mention its dimension?	
11.	CT Fixing Arrangement	
12.	Earthing Provision	

Date: (Signature).....

Place: (Printed Name).....

(Designation).....

(Common Seal).....

**GUARANTEED TECHNICAL PARTICULARS OF AC 3 PHASE 4 WIRE AMR WHOLE
CURRENT ENERGY METER WITH LCD DISPLAY**

Sr. No.	Particulars	Bidder's Offer
1.	Name of manufacturer	
2.	Type, Name & Number	
3.	Standard Applicable	
4.	Type of Meter (Model No.)	
5.	Rating	
	i) Accuracy Class	
	ii) Rated Voltage	
	iii) Rated Current	
	iv) Rated Frequency	
	v) Power Factor	
	vi) Minimum Saturation Current	
	vii) Meter Constant (imp/KWH)	
6.	i) Maximum continuous Current Rating (Amp.)	
	ii) Continuous current rating of terminals for two hours	
	iii) Running with no load & (-) 70% to 120% voltage	
7.	Short time over current for 10 milli seconds	
8.	Starting current at which meter will run & continue to run	
9.	Power loss at rated frequency & reference temperature	
	a) Current circuit at rated current	
	b) Voltage circuit at rated current	
10.	Type of material used	
	a) Base	
	Material	
	b) Meter cover	
	c) Terminal Block	
	Material	
	d) Terminal Cover	
	Material	
	e) Screw	
	i) Material	
	ii) Size	

Sr. No.	Particulars	Bidder's Offer
11.	Internal diameter of Terminal Hole	
12.	Centre to centre clearances between adjacent terminals	
13.	Transducers	
	i) Input	
	ii) Output	
	iii) CT- No. of turns	
14.	Type of Register	
	i) No. of Digits	
	ii) Size of Numerals	
15.	Display	
	i) On scroll Mode & Auto display mode	
	ii) Type of push button	
16.	Reading on power off condition	
17.	Battery of Real time clock	
18.	Fixing/sealing arrangement	
	i) Fixing of meter	
	ii) Sealing of meter cover to Base	
19.	Type of hinged undetectable terminal cover	
20.	Performance of meter in tamper conditions	
	i) Input and out put Terminals interchanged	
	ii) Changed of phase sequence	
	iii) Absence of Neutral	
	iv) Phase current reverse	
	v) Indication of above tamper condition	
21.	Suitability of meter to sustain over voltage i.e. phase to phase voltage injected between phased & neutral	
22.	Electromagnetic compatibility (EMI/EMC severity level)	
23.	i) Effect on accuracy of external electromagnetic interference of electrical discharge, external Magnetic field.	
	ii) Current reversal, Neutral disturbance & Magnetic tamper logging in memory	
24.	Effect on accuracy under tamper conditions/influence conditions	
25.	Drift in accuracy of measurement with time	
26.	Name plate details	
27.	Approximate weight of meter	
28.	Type of mounting	
29.	Calibration	
30.	Manufacturing activity	
	i) Mounting of components on PCB shall be SMT type	
	ii) Compliance of assurance	

Sr. No.	Particulars	Bidder's Offer
31.	Testing facility i) Fully automatic computerized meter test bench with print out facility shall be available ii) Make and Sr. No. of Test Bench iii) Accuracy of ESS duly calibrated iv) Following in house testing facility shall be available: a) AC high voltage test b) Insulation test c) Test of no load condition d) Test of starting condition e) Test on Limits of error f) Power loss in voltage and current circuit g) Test of meter constant h) Power loss in voltage & current circuit i) Test of Magnetic influence	
32	Whether offered meter type tested as per ISS: 13779/1999 Table-20 for all the following tests (indicate name of laboratory/Reference of report No. & Date) i) Vibration test ii) Shock test iii) Spring Hammer Test iv) Protection against penetration of dust and water v) Test of resistance to heat & fire vi) Power consumption vii) Influence of supply voltage viii) Voltage dips and interruptions ix) Short time over current x) Influence or self heating xi) Influence of Heating xii) Impulse voltage test xiii) AC High Voltage test xiv) Insulation test xv) Radio Interference Measurement xvi) Fast transient burst test xvii) Electrostatic discharge xviii) Immunity to electro-magnetic H.F. field xix) Test for meter constant xx) Test of starting condition xxi) Test of no load condition xxii) Ambient temperature influence xxiii) Test of influence quantities xxiv) Interpretation of test results xxv) Repeatability error test xxvi) Dry heat test xxvii) Cold Test xxviii) Damp head cycle test xxix) Test of influence of immunity to Earth fault xxx) Limits of error	

Sr. No.	Particulars	Bidder's Offer
33.	Guarantee period of meter	
34.	BIS Licence	
34.1	BIS Licence No. & Date with its validity for ISI certification mark on offered meter	
34.2	Details of meter design for which BIS certification has been obtained:	
	i) Ratio of Ib to Imax	
	ii) Material of meter body	
	iii) Type of energy registering counter	
	iv) Type of technology (Digital/Analog)	
	v) Grade of printed circuit Board material	
	vi) Type of assembly of component used (SMT)	
	vii) Meter constant (IMP/kWH)	
	viii) Auxiliary power circuit (with PT or PT less)	
	ix) Current class	
35.	ISO accreditation No. & Date with its validity	

Date:

(Signature).....

Place:

(Printed Name).....

(Designation).....

(Common Seal).....

**GUARANTEED TECHNICAL PARTICULARS OF WHOLE CURRENT METER
BOX WITH MODEM PROVISION**

Sr. No.	Particulars	Bidder's Offer
1.	Manufacturer's/Supplier's Name and Address	
2.	Material used for box body: Transparent Polycarbonate	
3.	Dimensions of box (L x W x H)	
4.	Meter Fixing Arrangements	
5.	Display Push Button operating arrangement at cover of the box	
6.	Meter Reading arrangement on the cover of the box (to read the meter without opening of meter box cover)	
7.	Thickness of Meter Box	
	a. From Back Side	
	b. From all other sides	
8.	Minimum Clearance of Meter from box surface	
	a. Right, Left & Top side.	
	b. Bottom side (from meter terminals)	
	c. Front side	
	d. Back side	
9.	Suitability for Outdoor Installation:	
	a. On rain with high speed wind.	
	b. On hummidity	
	c. On sun rays	

Date: _____ (Signature).....

Place: _____ (Printed Name).....

_____ (Designation).....

_____ (Common Seal).....

GUARANTEED TECHNICAL PARTICULARS OF INTELLIGENT GSM/GPRS MODEM

Sr. No.	Particulars	Bidder's Offer
1.	Operating band-Dual Band 900/1800 MHz	
2.	Application supported-data	
3.	GPRS support-Multislot 10 and coding scheme 1-4	
4.	Power output typically 2 watt @900 MHz or 1 watt @ 1800 MHz	
5.	Interface with electronic energy meter-RS232 D type 9F connector	
6.	Antenna-Dual band external wired antenna of 5 dBi gain with SMA	
7.	Three phase power supply Input-50V to 540 Volts AC, 50 Hz	
8.	Surge withstand capacity-6 kV	
9.	Enclosure material-Engineering plastic/poly carbonate enclosure	
10.	Sealing-The modem base and top cover shall have suitable arrangement for sealing	
11.	Indication LED-Modem should be provided with multiple LED's indicating its functioning status. LED's should be visible externally.	
12.	Sim card holder-to be accessible from outside without opening the modem enclosure.	
13.	Capable for data transfer to central station as per configuration via suitable software (responding to dialing from central station)	
14.	Modem shall support intelligent mode for fast data transfer and it should be possible to get the data available in the modem by dialing from central station.	
15.	Suitability for Outdoor Installation:	
	a. On rain with high speed wind	
	b. On humidity	
	c. On sun rays	
16.	SMS on power OFF and ON condition.	

Date: (Signature).....

Place: (Printed Name).....

(Designation).....

(Common Seal).....

GUARANTEED TECHNICAL PARTICULARS FOR 11 KV CT/PT SETS

A) GENERAL:

Sr. No.	Particulars	Bidder's Offer
1.	Type	
2.	Potential Transformer	
	a) Rated Voltage	
	b) Highest system voltage	
	c) Vector group	
	d) Burden	
	e) Accuracy	
	f) Core Material	
	g) Rated Voltage Factor & Time	
	h) Power frequency withstand Voltage	
	1) Primary Winding	
	2) Secondary Windings	
	i) Withstand Voltage	
	j) Core clamping arrangement	
	k) Insulation Class	
	l) Applicable Standard	
3.	Current Transformer	
	a) No. of CTs	
	b) Type	
	c) CT Ratio	
	d) CT burden per phase	
	e) Accuracy Class	
	f) Applicable Standard	
	g) Short time current	
	i) Thermal Rating	
	ii) Dynamic Rating	
	h) Power frequency withstand voltage	
	i) Primary winding	
	ii) Secondary Winding	
	i) Impulse withstand voltage	
	j) Maximum Current Density	
	i) At STC for 1 sound	
	ii) At rated Current	
	k) Type of core	
	l) Core material	
	m) Core clamping arrangement	
	n) Insulation Class	
	o) Instrument Security Factor	

Sr. No.	Particulars	Bidder's Offer
4.	Fittings and Mountings	
	a) Earthing Terminals	
	b) Oil Filling hole with plug	
	c) Drain Plug	
	d) Oil Level Guage	
	e) HV Bushing	
	i) Number	
	ii) Make	
	iii) Metal Parts	
	iv) Creepage Distance	
	v) Bird Guard	
	vi) Applicable Standard	
	f) Lifting Lugs	
	i) On top cover	
	ii) On sides	
	g) Lifting Lug thickness	
	h) Rating & terminal marking	
	i) Polarity marking	
	j) Size of LT terminal	
	k) LT Terminal material	
	l) Bolts, Nuts & Washer	
	i) Grade of Bolts	
	ii) Size of Bolts	
	iii) Center to center distance between adjacent bolts	
	iv) Grade of Washer	
	v) Minimum thickness of washer	
	vi) Gasket	
	m) Double compression flame proof metallic gland	
	n) PRV	
	i) Minimum pressure at which PRV will be operated	

B) TECHNICAL DESIGN PARAMETERS:

Sr. No.	Particulars	Bidder's Offer
1.	PT HV winding	
a)	HV Conductor size	
b)	Nos. of Coil per phase	
c)	Nos. of turn per phase	
2.	PT LV winding	
a)	LV conductor size	
b)	Nos. of turn per phase	
3.	PT core	
a)	Core characteristic as per core material supplier's data i.e. BH curve (Pease enclose curve)	
b)	Cross section area of core	
4.	CT	
a)	Instrument security factor	
b)	CT primary conductor size	
c)	No. of turns of primary winding	
d)	CT secondary conductor size	
e)	Nos. of turns of secondary windings	
f)	Nos. of parallel path used in secondary winding	
5.	Qty. of ifrst filling of transformer oil	
6.	Tank	
a)	Tank sheet size i) Top and bottom thickness ii) Side wall thickness	
b)	Tank size i) Overall Dimensions ii) Inside Dimensions	
c)	Rating PRV	

Date: (Signature).....

Place: (Printed Name).....

(Designation).....

(Common Seal).....