

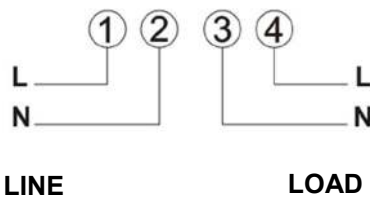
iM-1180

BS-STANDARD STS SMART METER Multi-Mode, Multi-Tariff, Dual Element Smart Metering

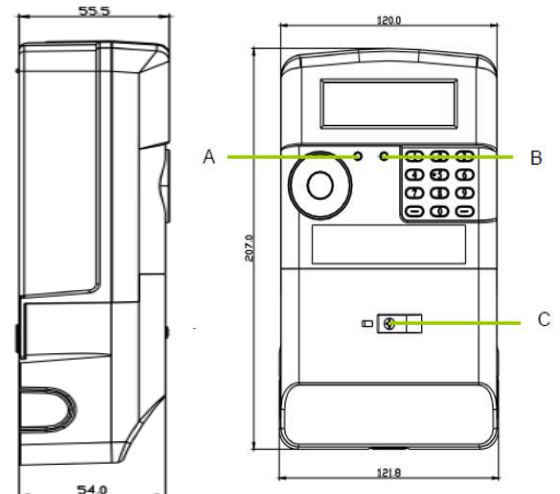


- **SINGLE-PHASE CLASS1, 2-WIRE, STS SMART-METER**
- Load profile logging every 15 minutes
- Time-Of Use with up to 4 TOU Tariffs
- Large user-friendly Bi-Colour Backlight LCD Display
- Neutral Current Measurement
- Reverse Current Measurement
- Configurable buzzer for alerts and alarms
- Various Operational Modes supported:
 - CONVENTIONAL CREDIT MODE
 - STS PREPAID (kWh)
 - STS TIME-OF-USE (CURRENCY)
 - STEP/BLOCK TARIFF
- Full AMI Functionality with several Communication options:
 - 3G-GSM– which allows meter to connect directly to back-end
 - G3-PLC / RS-485 / RF (LoRa) ,
 - Meter communicates to DCU and In-Home-Display (IHD)
 - Optical port [IEC 62056-21]
 - Standards based DLMS/COSEM Communications Protocol
- Terminal Cover Open detection
- BS-Footprint

TERMINAL ARRANGEMENT



Class	I
Reference Voltage	115–240V ac
Frequency	50-60 Hz
Base Current (I _b)	5 A
Max Current	80 A
Constant	1000 impulse / kWh
Starting Current	0.2% I _b
Reverse Current	LCD Icon Indication
Load Control	90A Magnetically Latching Relay





iM-1180

Specifications and Features

Technical Parameters	
Voltage	230V ac
Current	I(b) 5A , I _{max} 80A
Frequency	50Hz
Accuracy Class:	1.0 Active Energy
Impulse constant	1000imp/kWh
Power Consumption	<10VA/2W
Starting Current	40mA
Measurement Integration Period	Every 15 Minutes
2-Circuit Measurement	Phase Current Measurement
	Neutral-to-Earth leakage Current Measurement
	Reverse Flow detection
Operating Temperature	-20°C ~ +70°C
Operating Humidity	<95%
LCD Display	6+2 = 999999.99kW Dual Color Backlighting to indicate Meter status
Standards	IEC62052-11, IEC62053-21, IEC62053-31, IEC62055-41
Tamper Detection	Terminal Cover Open (Also detects when no AC power) Load-to-Ground connection External Magnetic Field Abnormal Voltage
Recorded Data & Events	Meter records the following Data : Date & Time Voltage, Current, Total Active Energy (import) Total Active Energy (export) Total Reactive Power Power Factor Frequency Available Credit Max Demand in current Month Max Demand in previous 2 months Meter Status (mode, tamper state, load-switch state etc) Meter Event (Tamper, overload, Token, low-Credit, Power-Fail etc) Reverse Current Over-Voltage Event Low-Voltage Event Low-Frequency Event Power-Fail Event Low-Credit Event Token Event Terminal Cover Open Tamper Load-to-Ground Tamper Magnetic Interference Tamper Credit Token History Management Token History



iM-1180

Specifications and Features

Communications	
Type	Full 2-way AMI functionality when connected to Communications Gateway Unit which provides ability to: Perform remote recharging when meter in prepayment mode Remote meter reading & configuration updates Remote disconnect / reconnect Remotely change Meter Mode Remotely update Tariff when in TOU or Block Tariff mode Tamper event push
Communication Protocol	Standards Based DLMS/COSEM(IEC62056) to DCU and In-Home Display
Communication Options	Power-Line Communications (Dual-Channel) + Optical IR Communications Port
	RS-485 Wired Communications + Optical IR Communications Port
	Long Range RF (LoRa) + Optical IR Communications Port
Operational Modes	Credit Mode <ul style="list-style-type: none"> Operates as a conventional kWh meter Can be changed to any other modes when required STS kWh Prepayment Mode <ul style="list-style-type: none"> Recharge either Remotely , or via keypad token entry on meter or via In-Home Display unit (CIU) Support Negative Credit Operation (can enable/disable feature remotely) Negative credit Limit configurable remotely TOU Currency Tariff Mode (STS) <ul style="list-style-type: none"> Recharge either Remote , or via keypad token entry on meter or via In-Home Display unit (CIU) Up to 8-TOU periods per Day are possible Separate Weekday & Weekend TOU period configurations New Tariff can be preloaded in meter in advance Step Tariff Currency Mode <ul style="list-style-type: none"> Deducts credit based on current Tariff step Up to 8 Consumption based Tariff Steps (in kWh) supported Configurable Tariff Price for each Step Remote Tariff configuration Tariff automatically RESET to first step at beginning <i>of each month</i>
User Interface	<ul style="list-style-type: none"> Large Custom LCD– icons to indicate communications status & Currency Mode Icons to indicate Reverse (Export) Energy flow & Tamper state Text Icons to indicate 'Remaining Credit' 'Total Credit' & 'Overload' Bi-colour LCD Backlighting - Red if Low/No Credit in Meter, Green if Credit is above low-credit threshold Backlighting also used to temporarily indicate validity of entered token Rubber keypad with audible beep on key-press Buzzer for audible alarm conditions– such as Low/No Credit warning Buzzer operation automatically disabled during night (configurable time) Different Buzzer alerts for valid & invalid Token entry LED for Meter Credit Status indication–Credit Status visible from a distance Tamper state display/disconnect behavior configurable Separate segments on LCD to indicate Short-code number also used to display current



iM-1180

Specifications and Features

Load Control	Built-in 90A latching Relay Load-Limit thresholds supported –2nd load-limit threshold only active during Peak TOU period to reduce customer load during Peak periods. Load-limit automatically restored after Peak TOU period ends. Both load-limit thresholds are configurable remotely Remote Relay Status override feature Configurable Negative Credit Configuration
Other Features	Commissioning Mode– no need for Clear tamper token during initial meter installation when terminal cover is open Backup Key Change/Recovery feature in case current meter STS key is unknown Configurable low-Credit Warning threshold to remind customer to recharge by beeping briefly Comprehensive list of short-codes to get & display various data and configurations

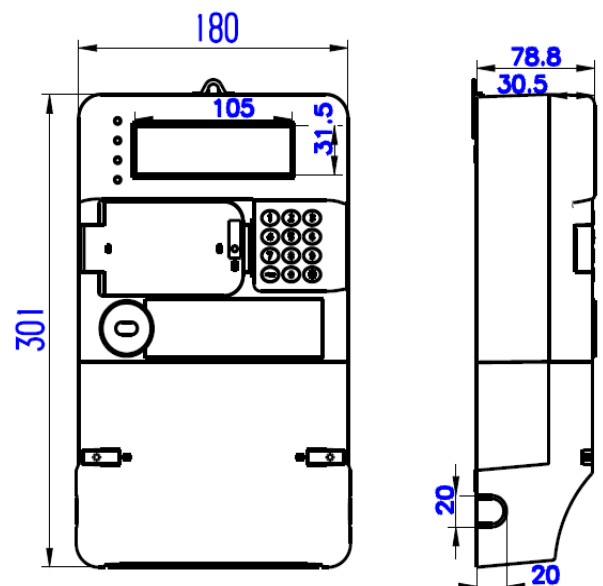
iM-31100 HCx

HIGH-CURRENT (CT / PT) 3-PHASE SMART METER



- Three-Phase Class I, 4-Wire, Direct connection Smart-Meter
- Indirect Connection via External CTs & PTs
- External Contactor switching Control
- Various Operational Modes supported:
 - CONVENTIONAL CREDIT MODE
 - STS PREPAID (kWh)
 - STS TIME-OF-USE (CURRENCY)
 - STEP/BLOCK TARIFF
- Can function as single or 2-Phase meter
- Forward and reverse active and reactive energy measurements with kWh and Kvarh verification outputs
- Neutral Current Measurement with 4th measuring element
- Configurable Neutral Current alarm & tamper settings
- Power quality measurements include: voltage, current, active power, reactive power, factor
- Load profile logging every 15 minutes
- Time-Of Use with u to 4 Tariffs
- Configurable Low-Credit Warning Threshold
- Configurable Negative Credit Threshold
- External contactor switching for Load Control
- Full AMI Functionality with several Communication options:
 - 3G-GSM- which allows meter to connect directly to back-end
 - G3-PLC / RS-485 / RF (LoRa) ,
 - Meter communicates to DCU and In-Home-Display (IHD)
 - Optical port [IEC 62056-21]
 - Standards based DLMS/COSEM Communications Protocol
- Advanced Tamper Detection :
 - Terminal Cover-Open Detection
 - Communications module compartment Cover-Open detection
 - External kiosk /Box Tamper detection
- Battery Backed Real-time Clock
- Large user-friendly Backlight LCD Display
- Independent LCD Menu scroll push-buttons
- Internal configurable buzzer for alerts and alarms

Class	I
Reference Voltage	220–400V ac
Base (I _b) and Max Current	5 A / 100 A per phase
Starting Current	0.2% I _b
Load Control	120A Internal Latching Relay
Constant	800 impulse / kWh
Temperature	
IP	54



iM-31100 D100

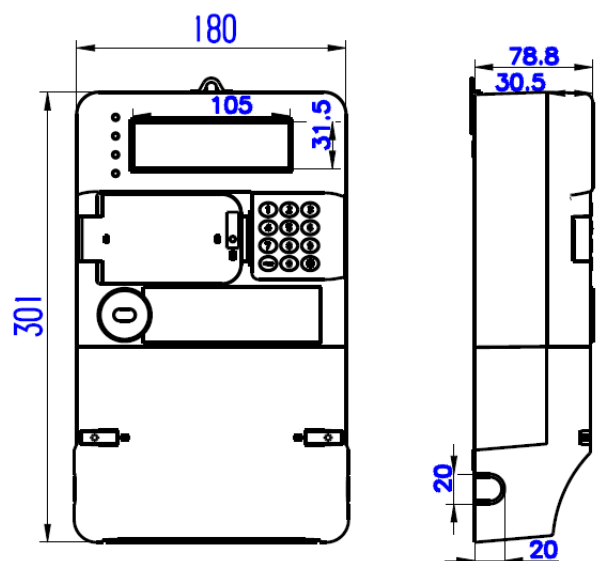
DIRECT CONNECTION

3-PHASE SMART METER



- Three-Phase Class I, 4-Wire, Direct connection Smart-Meter
- Various Operational Modes supported:
 - CONVENTIONAL CREDIT MODE
 - STS PREPAID (kWh)
 - STS TIME-OF-USE (CURRENCY)
 - STEP/BLOCK TARIFF
- Integrated CTs & Latching relays (100A / Phase Max)
- Can function as single or 2-Phase meter
- Forward and reverse active and reactive energy measurements with kWh and Kvarh verification outputs
- Neutral Current Measurement with 4th measuring element
- Configurable Neutral Current alarm & tamper settings
- Power quality measurements include: voltage, current, active power, reactive power, factor
- Load profile logging every 15 minutes
- Time-Of Use with u to 4 Tariffs
- Configurable Low-Credit Warning Threshold
- Configurable Negative Credit Threshold
- External contactor switching for Load Control
- Full AMI Functionality with several Communication options:
 - 3G-GSM- which allows meter to connect directly to back-end
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 - Standards based DLMS/COSEM Communications Protocol
- Advanced Tamper Detection :
 - Terminal Cover-Open Detection
 - Communications module compartment Cover-Open detection
 - External kiosk /Box Tamper detection
- Battery Backed Real-time Clock
- Large user-friendly Backlight LCD Display
- Independent LCD Menu scroll push-buttons
- Internal configurable buzzer for alerts and alarms
- BS-Footprint

Class	I
Reference Voltage	220–400V ac
Base (Ib) and Max Current	5 A / 100 A per phase
Starting Current	0.2% Ib
Load Control	120A Internal Latching Relay
Constant	800 impulse / kWh
Temperature	20 ~ +70 °C
IP	54

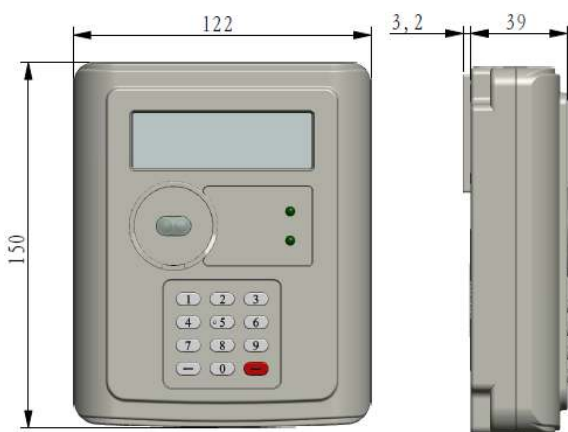


iM-IHD

IN-HOME DISPLAY



- **COMPACT WALL-MOUNT OR HAND-HELD UNIT**
- **LARGE USER FRIENDLY BACK-LIT LCD**
- **BATTERY OR MAINS POWERED**
- **LOW-POWER MODE TO CONSERVE BATTERIES**
- **BUZZER FOR AUDIBLE ALARM CONDITIONS**
- **SEVERAL COMMUNICATIONS OPTIONS:**
 - RF
 - PLC
 - WIRED CURRENT-LOOP (NO POWER OR BATTERIES)
- **EASY PAIRING WITH METER**



Reference Voltage	115–240V ac
Frequency	50-60 Hz
Battery (Optional)	4x AA
Temperature	-20 ~ +70 °C
IP Rating	IP54
Display:	6+2 = 999999.99 + icons
Backlighting	Green / Red
Credit Status	Green, Orange or Red LED
Communications	PLC, RF, RS-485 , Infra-Red

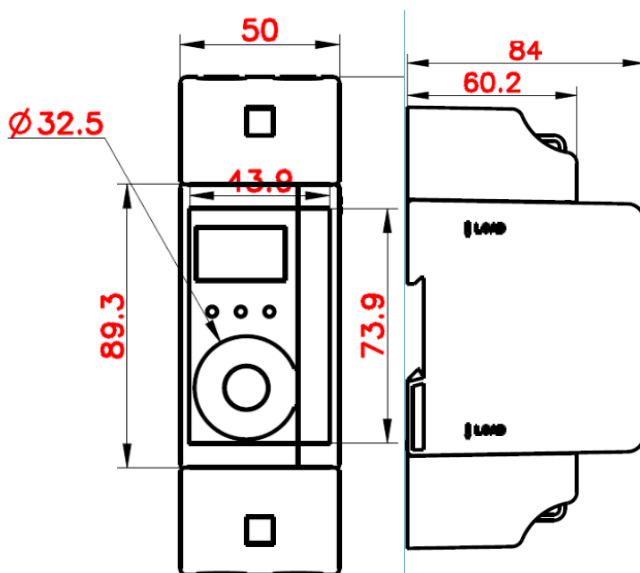
iM-D1180

DIN FORMAT STS SMART-METER



SINGLE-PHASE CLASS1 STS SMART-METER

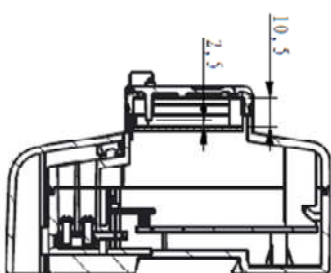
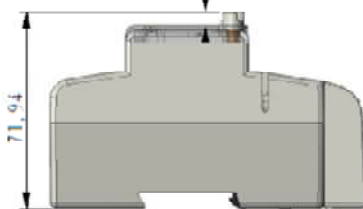
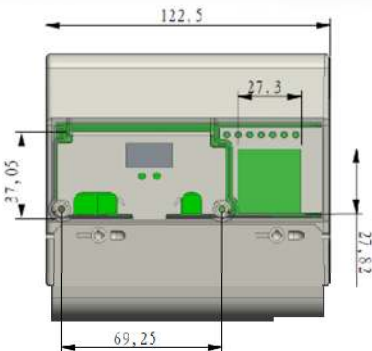
- Various Operational Modes supported:
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 - STS PREPAID (kWh)
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 - STEP/BLOCK TARIFF
- Full AMI Functionality with several Communication options:
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 - Optical port [IEC 62056-21]
 - Standards based DLMS/COSEM Communications Protocol
- Load profile logging every 15 minutes
- Time-Of Use with up to 4 Tariffs
- Terminal Cover Tamper Detection :



Class	I
Reference Voltage	115–240V ac
Frequency	50-60 Hz
Base Current (I _b)	5 A
Max Current	80 A
Constant	1000 impulse / kWh
Starting Current	0.2% I _b
Load Control	90A Magnetically Latching Relay
Communications	PLC, ZigBee RF, RS-485 , Infra-Red

iM-DCU

DATA CONCENTRATOR UNIT

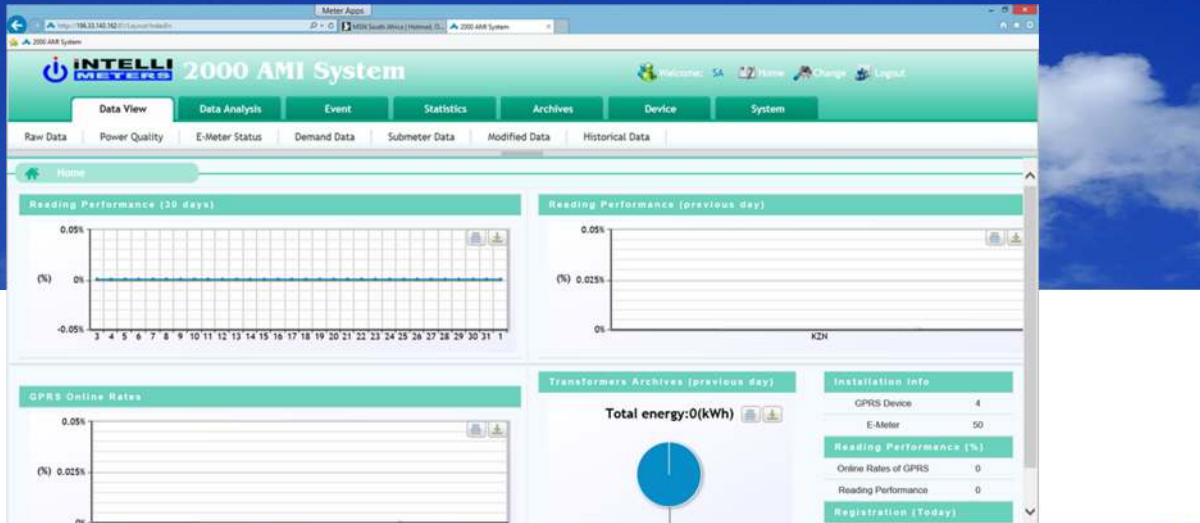


- **COMPACT 5-UNIT DIN FORMAT**
- **SEALABLE TERMINAL COVER**
- **CONNECTS METERS TO REMOTE SERVER**
- **MANAGES LOCAL NETWORK OF METERS**
- **DLMS/COSEM COMMUNICATIONS PROTOCOL**
- **SECURE ENCRYPTED COMMUNICATIONS**
- **SCHEDULES READS OF METER PROFILE**
- **BACKS UP PROFILE & EVENT DATA OF METERS**
- **REDUNDANCY-GPRS NETWORK SWITCH-OVER**
- **COMMUNICATIONS TYPES**
 - **RF (LoRa) - WITH ADDITIONAL RS-485**
 - **PLC (BPFsk) - WITH ADDITIONAL RS-485**
 - **PLC-G3 - WITH ADDITIONAL RS-485**

Reference Voltage	115—240V ac
Frequency	50-60 Hz
Battery (Optional)	External 12 V dc Gel
Temperature	-20 ~ +70 °C
IP Rating	IP54
Status Indication	LEDs
Protocol	DLMS
Server Communications	GPRS x 2 Channels
Meter Communications	PLC, ZigBee RF, RS-485 ,

Head-End System

CONTROL DASHBOARD



The Energy Statistics section provides a detailed view of energy usage for the Regency Court site. The table below summarizes the data:

CustomerNo	CustomerName	MeterAddress	Scheem	Rates	BeginTime	EndTime
1	000001	010015000001	082150000014	Day	Total	11/1/2015 12:00:00 AM
2	000002	010015000002	082150000022	Day	Total	11/1/2015 12:00:00 AM
3	000003	010015000003	082150000030	Day	Total	11/1/2015 12:00:00 AM
4	000005	010015000005	082150000055	Day	Total	11/1/2015 12:00:00 AM
5	000075	010015000075	082150000758	Day	Total	11/1/2015 12:00:00 AM
6	000051	010015000051	082150000519	Day	Total	11/1/2015 12:00:00 AM
7	000053	010015000053	082150000535	Day	Total	11/1/2015 12:00:00 AM
8	000054	010015000054	082150000543	Day	Total	11/1/2015 12:00:00 AM

The Advanced Metering Infrastructure System provides a comprehensive view of meter data. The table below shows the following columns:

Index	Real Clock	Voltage(V)	Current(A)	Sum L1 absolute act	Sum L1 absolute real	Sum L1 apparent ME	Sum L2 reactive pow	Balance Energy(kWh)	Balance Amount
1	2018-02-14 09:00	231.08	0.119	8204.24	1873.37	0.628	0.010	150.78	0.00
2	2018-02-14 09:13	233.13	0.816	8204.25	1873.38	0.877	0.132	150.75	0.00
3	2018-02-14 09:30	233.81	0.817	8204.29	1873.42	0.290	0.132	150.75	0.00
4	2018-02-14 09:45	234.57	0.818	8204.32	1873.45	0.196	0.133	150.88	0.00
5	2018-02-14 09:00	231.08	0.119	8204.36	1873.48	0.193	0.132	150.84	0.00
6	2018-02-14 09:13	234.04	0.819	8204.39	1873.52	0.192	0.132	150.85	0.00
7	2018-02-14 09:30	234.12	0.800	8204.43	1873.55	0.190	0.132	150.87	0.00
8	2018-02-14 09:45	234.16	0.800	8204.46	1873.58	0.189	0.132	150.84	0.00
9	2018-02-14 09:00	234.08	0.121	8204.49	1873.62	0.189	0.130	150.82	0.00
10	2018-02-14 09:13	231.14	0.118	8204.49	1873.61	0.000	0.131	150.83	0.00
11	2018-02-14 09:30	234.93	0.121	8204.49	1873.62	0.000	0.131	150.83	0.00
12	2018-02-14 09:45	231.40	0.120	8204.50	1873.62	-0.028	0.131	150.80	0.00
13	2018-02-14 09:00	236.17	0.121	8204.50	1873.62	-0.028	0.131	150.80	0.00
14	2018-02-14 09:13	236.06	0.122	8204.51	1873.62	-0.028	0.131	150.80	0.00
15	2018-02-14 09:30	238.12	0.122	8204.51	1873.63	0.000	0.131	150.80	0.00
16	2018-02-14 09:45	238.01	0.122	8204.52	1873.63	-0.029	0.131	150.80	0.00
17	2018-02-14 09:00	233.40	0.818	8204.54	1873.65	0.412	0.130	150.46	0.00
18	2018-02-14 09:13	233.10	0.808	8204.57	1873.68	0.201	0.130	150.43	0.00
19	2018-02-14 09:30	232.11	0.719	8204.61	1873.71	0.120	0.130	150.39	0.00
20	2018-02-14 09:45	231.10	0.719	8204.61	1873.71	0.120	0.130	150.39	0.00

The configuration window allows for detailed meter settings:

- Meter ID:** 082150000001
- Balance Date:** 2018-02-14 09:00
- Balance Amount:** 150.78
- Balance Type:** kWh
- Overhaul Date:** 00/00/00
- Overhaul Rate:** 0%