E5000

Revenue grade Dual Source Prepaid KWh meter

Salient Features:

- Wall mounting design.
- Tested as per IS13779.
- Class 1.0s Accuracy.
- Dual source Measurement.
- Current Limiting Facility.
- Pre-paid metering system using contactless smart cards.

Dual source Measurement & Current Limiting Facility

- Measures KWh and KVARh from two sources like EB and DG.
- When on the alternate source Trips the load if current exceeds the desired limit, which is site programmable.
- Reconnects automatically after 60 seconds.
- Prevents Overloading / Tripping of DG set caused due to excessive drawing of power by consumers.
- No need of external current limiters.

Prepaid Function:

1. RFID based contact less smart card Pre Paid Meter, which has distinct advantages over the conventional keypad based or plug in type card based Pre Paid Meters.
2. Collection of revenue before the utilization of electrical power.
3. Loading the credit revenue into the meter.
4. Decrementing the loaded revenue based on the rate of electricity (Rs. X / unit), which may change from time to time.
5. Providing alarm to the user when the credit balance falls to a particular value.
6. Disconnection of electrical power to the user on reaching zero credit balance.
7. Security of transactions, bill and report generation.
8. Unloading of revenue credit from the meter and refunding the money to the consumer if he so desires.

Applications:

- Shopping Malls & Multiplexes
- Residential Townships
- Commercial Buildings
- LT industrial loads and many more.

Smart Card based Pre-paid metering system using E5000.

E5000: E5000 is a polyphase whole current (30A or 60 A) digital KWh meter, with three relays capable of cutting the power connection to the load.

Pre-paid Electricity:

The idea behind pre-paid delivery of electricity is to shift the onus of paying the money for electricity in time from the provider to the user. In fact, in such a scheme, since the money for electrical energy used is collected in advance, there is going to be a positive cash flow for the electrical power provider. Also, the costs associated with the generation of the bills, delivery of the bills, and disconnection of the power supply in case the bills aren't paid on time is eliminated.

In a well implemented pre-paid scheme, the following points have to be addressed:

1. Collection of revenue before the utilization of electrical power.
2. Loading the credit revenue into the meter.
3. Decrementing the loaded revenue based on the rate of electricity (Rs. X / unit), which may change from time to time.
4. Providing alarm to the user when the credit balance falls to a particular value.
5. Disconnection of electrical power to the user on reaching zero credit balance.
6. Security of transactions, bill and report generation.
7. Unloading of revenue credit from the meter and refunding the money to the consumer if he so desires.

1) Collection of Revenue:

This is done on the vending station(s). If there is more than one station in case of a large geographical area, then all the individual stations are connected to a central database server which holds all the records.

2) Loading the credit revenue into the meter:

Once the user has his smart card loaded with credit, he will go to the meter and bring the smart card in close proximity to the meter. The card is sensed by the meter, and then read. There are two possible functions the meter could perform once the card is sensed. Either the credit from the card is downloaded into the meter, or the credit in the meter needs to be uploaded into the meter. The user is prompted by the meter to select the right function, and the user does it by using the keys on the front of the meter.

3) Decrementing the loaded revenue:

The amount of money loaded into the meter translates into a fixed amount of electrical energy, depending the prevailing rate for each unit of electricity. Based on this, as soon as energy consumption is recorded in the meter, the meter decrements the money loaded in a real time fashion. As the rate can change anytime, the vending software also loads the new rate for deduction to all the meters in the smart cards, as and when needed.

4) Providing Alarm:

As the pre-loaded figure in the meter reduces due to electricity usage, the user needs to be alerted to the fact that he needs to reload credit into the meter soon or risk the disconnection of electrical power. Various methods are used like a parallel display in the user's premises or just a periodic audio alarm in the user's premises etc.

5) Disconnection:

In spite of reminding the user, if he does not reload the credit into the meter, at some point, the revenue stored in the meter will reach zero. At this point, the electrical power to the user has to be disconnected. Inside the E5000, there are three 60A relays, which are in series with the load wiring. Normally, these relays are closed, but when credit reaches zero, the meter opens these contacts, thereby cutting supply to the user. This action is automatic. The relays are also of latching type, and hence even if power to the meter fails and comes back, the relay status remains open.

The only way to close these contacts is to reload credit into the meter.

6) Security of transactions:

The transactions are secured by means of:

a. Secure Encrypted Memory Smart Cards.

b. Record of every transaction in the database along with the identity of the person having done the transaction.

c. Physical printout records generated for the user for his records.

7) Unloading of revenue credit:

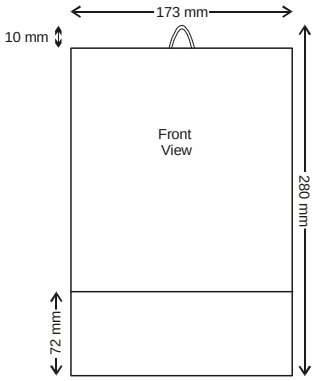
It may sometimes be necessary for the loaded credit to be unloaded and the same amount be returned to the user, e.g. If the tenant wants to vacate and move away. In this case, the vending software has the facility to unload the credit and printout a payment voucher in the name of the user.

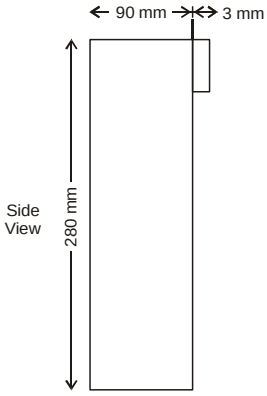
Technical Specifications:

➢ Parameter List:

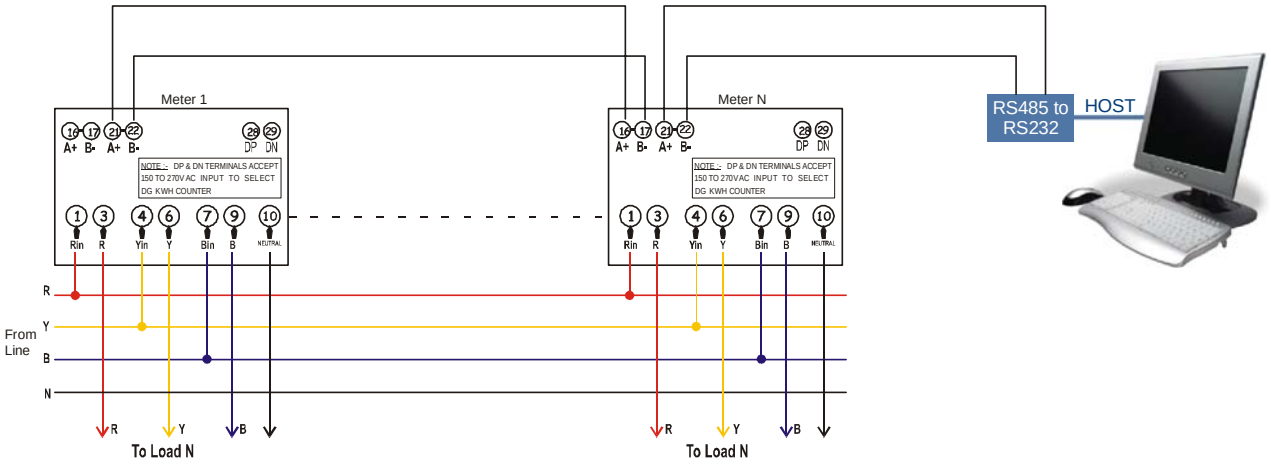
Metering parameter	Active Energy, KWh.
Additional parameters	Volts, Amps, KVA, KW, KVAR, PF, KVARh and Hz.
Vending activities	- Cash vending - Change in unit cost / tariff - Load limit - Refund - Emergency Credit levels
Voltage	240 V AC or 3X240 VAC
Current	Ibasic: 5A or 10A Imax: 30A or 60 A
Frequency of operation	50 Hz. +- 10 %
Burden	Voltage circuit: < 2W per phase Current circuit: < 3VA per phase
Power Supply	Not needed when connected to bus. Unit has in-built 3 phase supply with an operating range of 60VAC - 480 VAC, 50-60 Hz.
Metrology	IS13779, class 1.0
Data Retention	In ferro-magnetic non-volatile memory, no battery. Data retention 15years without power
Display format	Customized alphanumeric LCD
Operating temperature	0 deg. to 50 deg. Celsius
Dimensions	Height= 280 mm X Length= 173 mm X Depth = 93 mm

Dimensional Drawing:





Connection Drawing:



Specifications are subject to change due to continuous improvement.

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