NSM Solutions

Innovation is our legacy...

Smart Energy Meter

CT and PT Ratio Configuration

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A) Introduction

NSM's Smart Energy Meters are very versatile and on-site configurable.

It has several on-site programmable parameters.

e.g.

- Current Transformer Ratio
- Potential Transformer Ratio
- Electrical Network Configuration
    - 3 Phase 4 wire
    - 1 Phase

In case of SEM-3-5A-x-x, "Current Transformer" and "Potential Transformer" has be installed externally. And It's ratio is to be programmed in the meter. However, for other models, Current Transformer is already installed inside the meter and no need of any extra configuration.

There is also facility to configure the Electrical Network. i.e. 3 Phase 4 wire, 1 Phase.

If you have SEM-3-x-x-x meter, but you want to install it in a Single Phase system, Yes, it is possible.

After reading this guide, You would be able to do following.

- Configure CT and PT ratio, which is required for SEM-3-5A-x-x model.
- Configure 3 Phase Meter to act as 1 Phase meter.

B) Configuration

In the above image, You can see that there are 2 keys, Decrement and Increment. With the help of these keys, You can interact with the meter and configure it.

There are 5 Parameters in the meter available for configuration.

- SYS – System Network type i.e. 3 Phase 4 wire, 1 Phase
- UP – Primary of Potential Transformer (Line to Line Voltage in KiloVolts)
- US – Secondary of Potential Transformer (Line to Line Voltage in Volts)
- AP – Primary of Current Transformer
- AS – Secondary of Current Transformer

Please follow the Navigation tree on next page for setting appropriate values in above parameters.

Power On the meter

Press “Down” and “UP” keys simultaneously for 5 sec

codE (PassWord)

Enter Password as “0000”.
“DOWN” key for scrolling the number. “UP” key for shifting the cursor.

SYS PArA (System Parameter)

Ignore. And Just Press “UP” key to proceed.

SYS (Network Type)

3 – 3 Phase 3 wire
4 – 3 Phase 4 wire
1 – Single Phase system

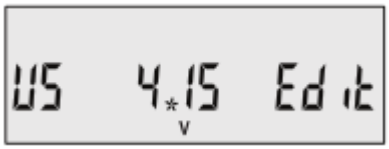
“DOWN” key for scrolling the number. “UP” key for accepting and go ahead.

UP (PT Primary)

Press “DOWN” key to edit.
Then Press “DOWN” to change the digit and “UP” key to shift the cursor.

Note – It is KV (KiloVolt) and LL i.e. Line to Line Voltage.

US (PT Secondary)

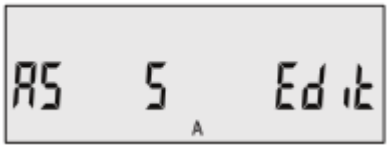


It is LL Voltage i.e. Line to Line.
‘*’ indicates the cursor and it is not decimal point.

AP
(CT Primary)

It is Current at Primary of the Current Transformer.
'*' indicates the cursor and it is not decimal point.

AS
(CT Secondary)



It is Current at Secondary of the Current Transformer.
'*' indicates the cursor and it is not decimal point.

Note – It has the option of only 1A and 5A.

Ignore further screens. Just power Off and On the meter.

Well, If you read the above Menu Tree, It is pretty straight forward, what are the parameters and how to configure them as per your requirement.

Let us see some examples next.

C) Examples

C.1) Example 1

If you have SEM-3-5A-x-x meter, and you want to install it in a system having Line to Line Voltage of 440V and have current of 500A each phase.

Solution:

As Line to Line Voltage is 440V, its Line to Neutral Voltage will be 440 / sqrt(3) = 254V. This much Voltage can be directly measured by the meter. Hence, There is no need of Potential Transformer. However, 500A is too large to measure directly by meter. So, you will require Current Transformer of ratio 500A:5A. i.e. 500A at Primary of CT will flow 5A at Secondary.

So, You need to program the parameters as below.

UP = 0.500 KV LL
US = 500V LL
AP = 500A
AS = 5A

By setting UP and US of same value, We are making Potential Transformer ratio as Unity.

C.2) Example 2 –

If you have SEM-3-40A-x-x meter, but now you want to install it in a Single Phase system.

Solutions:

Just change the value parameter “SYS” from 4 to 1.

SYS = 1

Now, your meter will act as Single Phase and will only monitor “R” phase. However, The Internal Power circuit is still the same as that of 3 Phase, Hence, Input Voltage Range will be 190V to 290V. This option should be used if you really know what you are doing.