Load Exclusion Module (LEM) specification and limitations

The load exclusion module, type LEM, is for use with the SuperTAPP voltage control RVM relay where a specific load/generation is to be excluded from the effective measured power transformer load. A typical application is where distributed generation is connected on an outgoing feeder or a capacitor is switched into and out of service at intervals, or is permanently connected.

The LEM module is designed for use with up to two transformers operating in parallel with one excluded load. If two transformers are connected to the bus bar supplying the excluded load the output current from the LEM to each transformer must be halved. Two relays are used for detection of the transformer running arrangement. When both transformers are in service the output from one interposer CT is connected to one SuperTAPP relay, when one transformer is out of service the output from both interpose CTs is connected to the remaining SuperTAPP relay.

LEM limitations:

- can be used with up to 2 transformers
- only one LEM can be used within the scheme
- generally only one load can be excluded (in some circumstances two loads can be summed up)
- LDC performance is compromised (depending on a proportion of the excluded load to the total load)
- designed for use with the SuperTAPP RVM relay
- Can be used with MicroTAPP but care must be taken to ensure CT connections

Many of these limitations can be overcome by the use of the SuperTAPP n+ which offers the following benefits:

- accurate voltage control at any power factor
- simple accommodation of multiple feeder measurements – functionality built into the relay
- built-in functions for feeder measurements such us load exclusion, generator estimation, load correction etc.
- generation estimation algorithms
- accurate LDC
- ability to increase voltage headroom in the network with DG
- easy to install and set up
- easy to add extra measurements later – future proof