IS 16444 (Part 1): 2015
a.c. Static Direct Connected Watthour Smart Meter Class 1 and 2 - Specification

IS 16444 (Part 1): 2015 defines specifications for a.c. static direct-connected watthour smart meters of accuracy class 1 and 2, designed to measure active energy for single-phase and three-phase loads in alternating current systems. Smart meters are equipped with measurement and data storage capabilities, internal connect/disconnect switches, and two-way communication to relay real-time data and events between consumers and utilities for applications like billing, analytics, and demand management.

Customers expect **high-quality performance**, **accuracy**, and **durability** from smart meters. Key parameters include the meter's ability to maintain accuracy under **variable loads** and **environmental conditions**, **robust communication features**, **resistance to tampering**, and **reliability in connecting and disconnecting power** to meet utility-set thresholds. Additionally, customers look for seamless remote access and firmware updates via utilities' control centres.

The standard addresses these expectations through rigorous testing requirements and specifications on several fronts. It defines testing protocols for **metrological accuracy**, **insulation properties**, **load switching capabilities**, and compatibility with both Neighbourhood Area Networks (**NAN**) and Wide Area Networks (**WAN**) for reliable two-way communication. Environmental tests are included to assess resilience to temperature fluctuations, humidity, and other climatic factors. **Electromagnetic compatibility** is also addressed to ensure minimal interference from radio frequencies.

Lastly, the smart meter standard specifies procedures for **secure communication**, **data protection**, and **event logging**, allowing the devices to meet utility and consumer expectations for both functionality and reliability in various scenarios.