CLAIMS

1. An electrical outlet/socket device comprising:

a sensor for detecting the presence of an identification tag associable with an electrical appliance, the sensor being configured for extracting a unique identifier of the electrical appliance stored in the identification tag;

one or more electrical conductors configured for coupling to the electrical appliance for supply of power to the electrical appliance;

a power switch/relay configured for selectively enabling the power supply to the electrical appliance;

a measurement unit coupled to the one or more electrical conductors for performing electrical measurements including measuring power-quality experienced at the electrical outlet/socket device by the electrical appliance; ~~and~~

a processor configured for associating the electrical measurements with the unique identifier for further processing~~.~~; and

a communication unit for data communication with a computing device to communicate data representing the unique identifier and associated electrical measurements to the computing device and to receive a command and associated matching criteria including a power-quality requirement from the computing device;

wherein the processor is configured for contextually measuring the power-quality experienced at the electrical outlet/socket device by the electrical appliance to determine electrical parameters based on the command received from the computing device, matching the electrical parameters against the associated matching criteria, and actuating the power switch/relay based on the matching.

2. The electrical outlet/socket device of claim 1, wherein the unique identifier is resolvable into a digital profile of the electrical appliance.

3. The electrical outlet/socket device of claims 1 or 2, wherein the sensor is based on near-field communication.

4. The electrical outlet/socket device of any one of the preceding claims, ~~further comprising a~~wherein the communication unit is configured for wireless data communication with ~~a~~the computing device.

~~5. The electrical outlet/socket device of claim 4, wherein the processor is configured for communicating data representing the unique identifier and the associated electrical measurements to the computing device.~~

~~6.~~5. The electrical outlet/socket device of any one of the preceding claims, ~~further comprising a power switch/relay configured for selectively enabling the power supply to the electrical appliance.~~

~~7. The electrical outlet/socket device of claim 6,~~ wherein the power switch/relay is configured for control based on ~~an external control signal~~the command received by the electrical outlet/socket device and/or based on an internal control signal.

~~8. The electrical outlet/socket device of claims 6 or 7, wherein the power switch/relay is configured for selectively enabling the power supply to the electrical appliance based on the unique identifier of the electrical appliance, wherein the power switch/relay may be configured for selectively enabling the power supply to the electrical appliance based on a digital profile resolved from the unique identifier of the electrical appliance.~~

~~9~~6. The electrical outlet/socket device of any one of the preceding claims, wherein the unique identifier comprises a randomly generated universal unique identifier, UUID.

~~10~~7. The electrical outlet/socket device of any one of the preceding claims, in the form of a wall socket or a portable socket/plug.

~~11~~8. A system for smart electrical power supply within a building, comprising:

an electrical outlet/socket device of any one of the preceding claims; and

~~a~~the computing device configured for data communication with the electrical outlet/socket device;

wherein the computing device is configured for processing data representing the unique identifier and the associated electrical measurements.

~~12~~9. The system of claim ~~11~~8, wherein the computing device is further configured for generating ~~control signals~~the command for the electrical outlet/socket device based on the processing of the data.

~~13~~10. The system of claims ~~11~~8 or ~~12~~9, further comprising a user interface for displaying of information based on the processed data and/or for user input of data for association with the unique identifier of the electrical appliance.

~~14. The system of any one of claims~~ 11. The system of any one of claim 8 to ~~13, further comprising~~ 10, wherein the computing device comprises a local server for the building and/or a remote server.

12. The system of claim 11, wherein the remote server is configured for data communication with ~~the computing device and with~~ other systems for smart electrical power supply.

~~15~~13. The system of any one of ~~claim 11~~claims 8 to ~~14, wherein the computing device comprises a local server for the building.~~

~~16. The system of any one of claims 11 to 15~~12, configured for implementing one or more of a group consisting of ~~fuse~~relay-based protection, energy consumption measurement, real-time voltage measurement, real-time current measurement, real-time active power measurement, real-time reactive power measurement, recording of the electrical measurements, displaying of the electrical measurements, power-quality information monitoring, power-quality anomalies monitoring, automated identification of appliances, automated locating of appliances, automated appliance authentication, automated appliance list generation, scheduling applications, optimization applications, billing applications, and auditing applications.

~~17~~14. A method for smart electrical power supply within a building, the method being performed using an electrical outlet/socket device, and the method comprising:

detecting the presence of an identification tag associable with an electrical appliance, and extracting a unique identifier of the electrical appliance stored in the identification tag;

performing electrical measurements including measuring power-quality experienced at the electrical outlet/socket device by the electrical appliance;

associating the electrical measurements with the unique identifier for further processing; ~~and~~

performing data communication with a computing device to communicate data representing the unique identifier and associated electrical measurements to the computing device and to receive a command and associated matching criteria including a power-quality requirement from the computing device at the electrical outlet/socket device; and

using the electrical outlet/socket device to contextually measure the power-quality experienced at the electrical outlet/socket device by the electrical appliance to determine electrical parameters using the electrical outlet/socket device based on the command received from the computing device, matching the parameters against the criteria, and actuating a relay based on the matching.

15.

~~18.~~ The method of claim ~~17~~14, wherein the unique identifier is resolvable into a digital profile of the electrical appliance.

~~19~~16. The method of claims ~~17~~14 or ~~18~~15, wherein the detecting is based on near-field communication.

17.

~~20.~~ The method of any one of claims ~~17~~14 to ~~19, further comprising~~16, wherein the data communication between the electrical outlet/socket device and ~~a~~the computing device is performed wirelessly.

18.

~~21. The method of claim 20, comprising communicating data representing the unique identifier and the associated electrical measurements to the computing device.~~

~~22. The method of~~ any one of claims ~~17 to 21, further comprising selectively enabling the power supply to the electrical appliance.~~

~~23. The method of claim 22~~14 to 17, comprising control of the power supply based on ~~an external control signal~~the command received by the electrical outlet/socket device and/or based on an internal control signal.

~~24~~19. The method of any one of claims ~~22 or 23, comprising selectively enabling the power supply~~14 to ~~the electrical appliance based on the unique identifier of the electrical appliance~~18, wherein the ~~selectively enabling the power supply to the electrical appliance may be~~command is based on a digital profile resolved from the unique identifier of the electrical appliance.

20.

~~25. The method of any one of claims 17~~14 to ~~24~~19, wherein the unique identifier comprises a randomly generated universal unique identifier, UUID.

~~26~~21. The method of any one of claims ~~17~~14 to ~~25~~20, wherein the electrical outlet/socket device is in the form of a wall socket or a portable socket/plug.

~~27~~22. The method of any one of claims ~~17~~14 to ~~26~~21, comprising processing data representing the unique identifier and the associated electrical measurements using ~~a~~the computing device.

~~28~~23. The method of claim ~~27~~22, further comprising displaying of information using a user interface based on the processed data using a user interface and/or user input of data for association with the unique identifier of the electrical appliance using the user interface.

~~29~~24. The method of any one of claims ~~17~~14 to ~~28, comprising using a~~ 23, wherein the computing device comprises a local server and/or a remote server for the further processing.

~~30~~25. The method of claim ~~29~~24, further comprising using the remote server for communication with other systems for smart electrical power supply.

~~31~~26. The method of claims ~~29~~24 or ~~30~~25, wherein the ~~computing device comprises a~~ local server is for the building.

~~32~~27. The method of any one of claims ~~17~~14 to ~~31~~26, performed for implementing one or more of a group consisting of ~~fuse~~relay-based protection, energy consumption measurement, real-time voltage measurement, real-time current measurement, real-time active power measurement, real-time reactive power measurement, recording of the electrical measurements, displaying of the electrical measurements, power-quality information monitoring, power-quality anomalies monitoring, automated identification of appliances, automated locating of appliances, automated appliance authentication, automated appliance list generation, scheduling applications, optimization applications, billing applications, and auditing applications.