CLAIMS:

1. A welding connector for measuring welding parameters in real time when used with an electrical power source, comprising:

a primary conductor for connecting to a work piece; and

a unitary sheath for housing:

the primary conductor and provides electrical insulation to the primary conductor;

encapsulated mechanisms for measuring a current flow and a voltage at the primary conductor; and

a display for indicating values of the current flow and the voltage.

2. The welding connector of claim 1, further comprising:

a processor, wherein

- the encapsulated mechanisms are in electrical communication with the processor; and the encapsulated mechanisms further comprising the following mechanisms:
- a mechanism for measuring a temperature at the work piece; and
- a mechanism for measuring a time duration of the current flow to the work piece.

3. The welding connector of claim 2, wherein the encapsulated mechanisms comprise:

- the mechanism for measuring the current available to a first electrical tool, which electrically connects the primary conductor to the work piece;
- the mechanism for measuring the voltage available to the first electrical tool;
- the mechanism for measuring the temperature at the work piece; and
- the mechanism for measuring the time duration of the current flow to the work piece.

4. The welding connector of claim 3, wherein, the display further indicates values of the temperature at the work piece and time duration of the current flow to the work piece; and

further comprising:

a data logging module for capturing and recording the values of the current, the voltage available to the first electrical tool, the temperature at the work piece and time duration of the current flow to the work piece,

wherein the data logging module is also encapsulated in the unitary sheath.

5. The welding connector of claim 4, wherein the primary conductor comprises a first connecting member for electrical communication with the electrical power source and a second connecting member for electrical communication with the first electrical tool, wherein the first electrical tool is configured to electrically connect the primary conductor to the work piece.

6. The welding connector of claim 5, further comprising a second conductor extending outwardly from the primary conductor for electrical communication with a second electrical tool.

7. The welding connector of claim 5, further comprising a secondary circuitry in electrical communication with the primary conductor for measuring the current at the second connecting member.

8. The welding connector of claim 4, further comprising a DC power source in electrical communication with the processor, the encapsulated mechanisms, the data logging module and the display.

9. The welding connector of claim 8, wherein the DC power source comprises one or more rechargeable or non-rechargeable disposable batteries.

10. The welding connector of claim 8 or claim 9, wherein the DC power source is enclosed in a water resistant enclosure formed in the unitary sheath, with the water resistant enclosure further having a cover to prevent ingress of water.

11. The welding connector of claim 4, wherein the display comprises a digital LED display having resettable multi-unit readings for indicating current, voltage, temperature and time duration.

12. The welding connector of claim 5, wherein the encapsulated mechanism for measuring current is disposed at a portion of the second connecting member.

13. The welding connector of claim 12, wherein the encapsulated mechanism for measuring current is configured to induce a secondary current, and the secondary current is configured to

electrically communicate with the processor for generating a value of the current flow at the display.

14. The welding connector of claim 5, wherein the encapsulated mechanism for measuring the voltage comprises a first measuring point located on the second connecting member and a second measuring point connectable to the work piece, with the encapsulated mechanism for measuring the voltage is configured to electrically communicate with the processor for generating a value of the voltage at the display.

15. The welding connector of claim 14, wherein the first measuring point comprises a socket located on the unitary sheath of the welding connector, while the second measuring point is connected to the work piece via a cable.

16. The welding connector of claim 2 or 3, wherein the encapsulated mechanism for measuring the temperature at the work piece comprises a thermocouple detachably disposed on the work piece, wherein the thermocouple is configured to electrically communicate with the processor via a cable to indicate a value of the temperature.

17. The welding connector of claim 2 or 3, wherein the mechanism for measuring the time duration of the current flow to the work piece comprises an hour meter mounted within the welding connector and a relay for electrical communication with the processor.

18. The welding connector of claim 8, wherein the mechanism for measuring the temperature and the mechanism for capturing the current flow to the work piece are configured to electrical communicate with the DC power source.

19. The welding connector of claim 4, wherein the data logging module comprises:
a data acquisition device in electrical communication with the processor;
a user interface for communicating with a computer via wire or wireless connection; and
a visual aid located at the display for indication of a stored memory capacity.

20. The welding connector of claim 1, wherein the electrical power source comprises a welding machine.

21. The welding connector of claim 3, wherein the first electrical tool comprises a welding electrode holder.

22. The welding connector of claim 6, wherein the second electrical tool comprises a welding electrode quiver.

23. The welding connector of claim 6, wherein the unitary sheath is in immovable close contact to provide a rigid encapsulation of the primary conductor, the second conductor, the processor and the display.

24. A system for measuring and recording welding parameters comprising:

an electrical power source;

a welding tool; and

a welding connector connecting the welding tool to the electrical power source for measuring the welding parameters in real time;

wherein the welding connector comprises:

- a primary conductor for connecting to a work piece; and
- a unitary sheath for housing:
    - the primary conductor and provides electrical insulation to the primary conductor,
    - encapsulated mechanisms for measuring current flow and voltage at the primary conductor; and
    - a display for indicating values of the current flow and the voltage.

25. The system of claim 24, further comprising:

a second conductor extending from the primary conductor and a processor in electrical communication with the encapsulated mechanisms for measuring the welding parameters in real time,

wherein the encapsulated mechanisms further comprise the following mechanisms:

- a mechanism for measuring a temperature at the work piece; and
- a mechanism for measuring a time duration of the current flow to the work piece.

26. The system of claim 24, wherein the encapsulated mechanisms comprise:

- the mechanism for measuring the current available to a first electrical tool, which electrically connects the primary conductor to the work piece;
- the mechanism for measuring the voltage available to the first electrical tool;
- the mechanism for measuring temperature at the work piece; and
- the mechanism for measuring time duration of the current flow to the work piece.

27. The system of claim 26, wherein the display further indicates values of the temperature and time duration of the current flow to the work piece; and

further comprising:

a data logging module for capturing and recording the values of the current flow, the voltage available to the first electrical tool, the temperature and time duration of the current flow to the work piece,

wherein the data logging module is enclosed in the unitary sheath.

28. The system of claim 24, wherein the mechanism for measuring current is disposed at a portion of a second connecting member connectable to the primary conductor.

29. The system of claim 28, wherein the mechanism for measuring the voltage comprises a first measuring point located on the second connecting member and a second measuring point connectable to the work piece.

30. The system of claim 25 or 27, wherein the mechanism for measuring the temperature at the work piece comprises a thermocouple detachably disposed on the work piece, wherein the thermocouple is configured to electrically communicate with the processor via a cable to indicate a value of the temperature.

31. The system of claim 25, 26 or 27, wherein the mechanism for measuring the time duration of the current flow to the work piece comprises an hour meter mounted within the unitary sheath and a relay configured in electrical communication with the processor.

32. The system of claim 25, wherein the mechanism for measuring the temperature and the mechanism for measuring the current flow to the work piece are configured to be in electrical communication with a DC power source housed within the unitary sheath.

33. The system of claim 27, wherein the data logging module comprises:

a data acquisition device in electrical communication with a secondary circuitry connected to the primary conductor;

a user interface for communicating with a computer via wire or wireless connection; and

a visual aid located at the display for indication of a stored memory capacity.

34. The system of claim 25, wherein the unitary sheath is in immovable close contact to provide a rigid encapsulation of the primary conductor, the second conductor, the processor and the display.

35. A method for measuring welding parameters comprising:

housing a primary conductor in a unitary sheath;

connecting the primary conductor to a work piece;

measuring a current flow and a voltage in real time with encapsulating mechanisms coupled to the primary conductor, wherein the current flow and the voltage constitute the welding parameters; and

displaying values of the welding parameters on a display;

wherein the encapsulated mechanisms and the display are housed in the unitary sheath.

36. The method of claim 35, further comprising the step of:

extending a second conductor from the primary conductor within the unitary sheath; and

connecting the encapsulated mechanisms in electrical communication with a processor,

wherein the step of measuring the welding parameters in real time further comprises:

- measuring a temperature at the work piece; and
- measuring a time duration of the current flow to the work piece.

37. The method of claim 36, wherein:

the step of measuring the welding parameters in real time comprises the steps of:

- measuring the current available to a first electrical tool that electrically connects the primary conductor to the work piece;
- measuring the voltage available to the first electrical tool;
- measuring the temperature at the work piece; and

- measuring the time duration of the current flow to the work piece.

38. The method of claim 37, further comprising the steps of:

indicating on a display values of the current flow, the voltage available to the first electrical tool, the temperature and time duration of the current flow to the work piece; and

capturing and recording values of the current flow, the voltage available to the first electrical tool, the temperature and time duration of current flow to the work piece by a data logging module,

wherein the data logging module is enclosed in the unitary sheath.

39. The method of claim 37, wherein measuring the current flow comprises connecting a current transformer to a portion of a second connecting member, which is connectable to the primary conductor.

40. The method of claim 39, wherein measuring the voltage comprises connecting a first measuring point on the second connecting member and a second measuring point connectable to the work piece.

41. The method of claim 37, wherein measuring the temperature at the work piece comprises connecting a thermocouple detachably located on the work piece, wherein the thermocouple is in electrically communication with the processor via a cable.

42. The method of claim 37, wherein capturing the time duration of the current flow to the work piece comprises connecting an hour meter mounted within the unitary sheath and a relay in electrical communication with the processor.

43. The method of claim 37, wherein measuring the temperature and measuring the current flow to the work piece comprise connecting the encapsulated mechanisms in electrical communication with a DC power source housed within the unitary sheath.

44. The method of claim 38, further comprising:

connecting a data acquisition device in electrical communication with the processor;

connecting the data logging module to the processor for capturing a set of welding parameters;

providing a user interface for communicating with a computer via wire or wireless connection; and

providing a visual aid located at the display for indication of a stored memory capacity.