It is claimed:

1. A method of measuring pressure at a downhole location in a subterranean wellbore at high-temperatures, the method comprising the steps of:

inserting into the wellbore a pressure gauge assembly having a pressure sensor and associated electronics for operating the pressure sensor;

exposing the pressure sensor to a downhole wellbore pressure;

exposing the pressure gauge assembly to a downhole temperature;

flowing a pressurized fluid into a chamber proximate the pressure sensor; and

cooling the pressure gauge assembly sufficiently to preclude damage from exposure to the downhole temperature.

2. A method as in claim 1, further comprising the step of expanding the pressurized fluid in the chamber.

3. A method as in claim 2, further comprising the step of expanding the pressurized fluid from a liquid to a gaseous phase.

4. A method as in claim 2, further comprising the step of flowing the pressurized fluid through an orifice prior to flowing the refrigerant fluid into the chamber.

5. A method as in claim 4, further comprising the step of flowing the pressurized fluid through an evaporator tube after flowing the fluid through the orifice.

6. A method as in claim 1, wherein the step of exposing the pressure sensor to a downhole wellbore pressure further comprises the step of communicating the downhole wellbore pressure through a passageway extending from the pressure sensor.

7. A method as in claim 6, wherein the pressure sensor further comprises a fluid isolation device capable of transmitting pressure.

8. A method as in claim 1, further comprising the step of flowing the pressurized fluid uphole.

9. A method as in claim 8, further comprising the step of circulating the pressurized fluid between the surface and the downhole pressure gauge assembly.

10. A method as in claim 1, wherein the step of flowing the pressurized fluid into the chamber proximate the pressure sensor further comprises the step of flowing the pressurized fluid downhole through a relatively small inner diameter tube.

11. A method as in claim 1, further comprising the step of measuring the internal temperature of the pressure gauge assembly.

12. A method as in claim 11, further comprising altering the rate of flow of the pressurized fluid in response to measuring the internal temperature of the pressure gauge assembly.

13. A method as in claim 1, further comprising the step of pressurizing the fluid in the pressure gauge assembly prior to insertion into the wellbore.

14. A method as in claim 1, wherein the pressurized fluid is a refrigerant.

15. A method of measuring downhole pressure in a wellbore extending through a subterranean formation, the method comprising the steps of:

positioning an electronic pressure gauge assembly at an uphole location along the wellbore;

positioning a pressure chamber at a downhole location along the wellbore;

exposing the pressure chamber to a downhole temperature above the maximum operational temperature of the pressure gauge assembly;

communicating the downhole wellbore pressure to the pressure chamber;

communicating pressure in the pressure chamber to the pressure gauge assembly positioned uphole; and

measuring the pressure communicated to the pressure gauge assembly using the pressure sensor.

16. A method as in claim 15, further comprising the step of communicating pressure from the pressure chamber to the pressure gauge assembly via a pressure conduit filled with a pressurized fluid.

17. A method as in claim 16 wherein the fluid is an inert gas.

18. A method as in claim 16 wherein the pressure conduit is a relatively small inner diameter conduit.

19. A method as in claim 15, wherein the step of communicating the downhole pressure to the pressure chamber further comprises actuating a temporary pressure isolation device.

20. A method as in claim 19, wherein the pressure isolation device is selected from the group consisting of: frangible disks, rupture disks, and eutectic plugs.

21. A method as in claim 19, wherein the temporary pressure isolation device is actuated by thermal expansion of a pressurized fluid in the chamber.

22. A method as in claim 19, wherein the temporary pressure isolation device is actuated in response to a change in wellbore pressure.

23. A method as in claim 15 wherein the pressure gauge assembly is a wired permanent gauge assembly.

It is claimed:

1. A method of measuring pressure at a downhole location in a subterranean wellbore, the method comprising:

inserting into the wellbore a pressure gauge assembly comprising a pressure sensor;

exposing the pressure sensor to a downhole wellbore pressure;

exposing the pressure gauge assembly to a downhole temperature;

flowing a fluid to the pressure gauge assembly from a fluid control assembly at a surface location;

cooling the pressure sensor sufficiently to preclude damage from exposure to the downhole temperature by flowing the fluid through an evaporator at least partially in the pressure gauge assembly and expanding the fluid in the evaporator;

returning the evaporated fluid to the fluid control assembly;

condensing the evaporated fluid at the surface location; and

returning the condensed fluid downhole to the evaporator to cool the pressure sensor.

2. A method as in claim 1, further comprising the step of expanding the fluid from a liquid to a gaseous phase.

3. A method as in claim 1, further comprising the step of flowing the fluid through an orifice prior to flowing the fluid through the evaporator.

4. A method as in claim 1, wherein the step of exposing the pressure sensor to a downhole wellbore pressure further comprises the step of communicating the downhole wellbore pressure through a passageway extending from the pressure sensor.

5. A method as in claim 4, wherein the pressure sensor further comprises isolation device capable of transmitting pressure.

6. A method as in claim 1, wherein flowing the fluid to the pressure gauge assembly further comprises the step of circulating the fluid, in a closed circuit, between the surface location and the pressure gauge assembly.

7. A method as in claim 1, wherein the step of flowing the fluid to the pressure gauge assembly further comprises the step of flowing the fluid downhole through a capillary tube.

8. A method as in claim 1, further comprising the step of measuring the internal temperature of the pressure gauge assembly.

9. A method as in claim 8, further comprising altering the rate of flow of the fluid in response to measuring the internal temperature of the pressure gauge assembly.

10. A method as in claim 1, further comprising the step of pressurizing the fluid in the pressure gauge assembly prior to insertion into the wellbore.

11. A method as in claim 1, wherein the fluid comprises a refrigerant.

12. A method of measuring downhole pressure in a wellbore extending through a subterranean formation, the method comprising:

positioning an electronic pressure gauge assembly comprising a pressure sensor at an uphole location along the wellbore;

positioning a pressure chamber at a downhole location along the wellbore;

exposing the pressure chamber to a downhole temperature greater than a maximum operational temperature of the electronic pressure gauge assembly;

flowing a fluid to the electronic pressure gauge assembly from a fluid control assembly at a surface location;

cooling the pressure sensor sufficiently to preclude damage from exposure to another downhole temperature by flowing the fluid through an evaporator at least partially in the pressure gauge assembly and expanding the fluid in the evaporator;

returning the evaporated fluid to the fluid control assembly;

condensing the evaporated fluid at the surface location; and

returning the condensed fluid downhole to the evaporator to cool the pressure sensor;

communicating the downhole wellbore pressure to the pressure chamber;

communicating a pressure in the pressure chamber to the pressure gauge assembly positioned uphole; and

measuring the pressure communicated to the pressure gauge assembly using the pressure sensor; and

wherein communicating pressure from the pressure chamber to the pressure gauge assembly comprises communicating pressure via a conduit filled with a pressurized fluid.

13. A method as in claim 12 wherein the pressurized fluid is an inert gas.

14. A method as in claim 12 wherein the conduit comprises a capillary tube.

15. A method as in claim 12, wherein the step of communicating the downhole pressure to the pressure chamber further comprises actuating an isolation device.

16. A method as in claim 15, wherein the isolation device comprises at least one selected from the group consisting of: frangible disks, rupture disks, and eutectic plugs.

17. A method as in claim 15, wherein the isolation device comprises a temporary fluid isolation device configured to be actuated by thermal expansion of a pressurized fluid in the pressure chamber.

18. A method as in claim 15, wherein the isolation device comprises a temporary fluid isolation device configured to be actuated in response to a change in downhole pressure.

19. A method as in claim 12 wherein the pressure gauge assembly comprises a wired permanent gauge assembly.