CLAIMS

1. Circuitry for supplying power and data to an output via a common transmission line, the circuitry comprising:

   a DC power source;

   a data signal source;

   a modulator configured to generate a modulated signal in dependence on the data signal; and

   an inverter, wherein the inverter is controlled by the modulated signal, such that the inverter generates an AC signal for output to the transmission line, wherein the AC signal for output to the transmission line comprises a substantially sine wave AC signal with data superimposed on it.

2. The circuitry according to claim 1, wherein the modulator is operable to generate a pulse width modulated signal in dependence on the data signal.

3. The circuitry according to claim 1, wherein the inverter comprises an H-bridge.

4. A power and data supply system comprising:

   circuitry according to claim 1;

   a transmission line for receiving the AC signal from the inverter; and

   a converter configured to extract the data from the AC signal received from the transmission line.

5. The power and data supply system according to claim 4, wherein the converter comprises an analogue to digital converter.

6. The power and data supply system according to claim 4, further comprising a rectifier.

7. The power and data supply system according to claim 6, comprising a further inverter.

8. The power and data supply system according to claim 7, wherein the further inverter comprises an H-bridge.

9. The power and data supply system according to claim 7, further comprising a controller configured to control the switching timing of the further inverter, the controller being operable to effect switching using timing dependent on the current of the received AC signal.

10. A hydrocarbon extraction facility comprising the power and data supply system according to claim 4, wherein the circuitry is located at a surface location, the transmission line is located within an umbilical cable connected between the surface location and an underwater location, and the converter is located at the underwater location.

11. A method of supplying power and data to a common transmission line, the method comprising:

providing DC power to an inverter operable to switch the DC power;

modulating a data signal to generate a modulated signal in dependence on the data signal; and

controlling the inverter using the modulated signal to generate a substantially sine wave AC sigma with data superimposed on it for output to the transmission line.

12. The method according to claim 11, wherein modulating the data signal comprises pulse width modulating the data signal.

13. The method according to claim 11, wherein the inverter comprises an H-bridge.

14. A method of supplying power and data to a location, the method comprising:

supplying power and data to a transmission line input in accordance with the method of claim 11; and

extracting the data from the AC signal received from an output of the transmission line.

15. The method according to claim 14, wherein extracting the data comprises analogue to digital conversion.