

WHAT IS CLAIMED IS:

1. A prosthetic valve comprising:
a plurality of valve leaflets;
a frame assembly configured to support the plurality of valve leaflets and define
a plurality of commissure supports terminating at an outflow end of the
prosthetic valve;
an electrical sensor device disposed on a portion of one of the commissure
supports of the frame assembly and configured to generate a sensor signal
indicating deflection of one or more of the plurality of commissure
supports; and
a transmitter assembly configured to receive the sensor signal from the electrical
sensor device and wirelessly transmit a transmission signal, wherein the
transmission signal is based at least in part on the sensor signal;
wherein the electrical sensor device comprises a piezoelectric sensor.
2. The prosthetic valve of claim 1, wherein the piezoelectric sensor is a
component of a sensor microchip including circuitry housed within a protective housing.
3. The prosthetic valve of claim 1 or 2, wherein the piezoelectric sensor is
fixed to base of one of the plurality of commissure supports.
4. The prosthetic valve of claim 1 or 2, wherein the piezoelectric sensor is
fixed to a distal end portion of one of the plurality of commissure supports.
5. The prosthetic valve of claim 1, wherein the piezoelectric sensor
comprises:
a piezoelectric material layer disposed between first and second conductive
layers; and
a biocompatible laminate layer at least partially providing a protective barrier
for one or more of the piezoelectric material layer, the first conductive
layer and the second conductive layer.
6. The prosthetic valve of claim 1 or 5, wherein the transmitter assembly is
configured to receive power wirelessly from an external power supply and transmit the
transmission signal using the received power.

7. The prosthetic valve of claim 6, wherein the external power supply comprises a wearable strap configured to be worn around an abdomen of a patient in whom the prosthetic valve is implanted.

8. The prosthetic valve of claim 1 or 7, wherein the piezoelectric sensor comprises a piezoresistive device.

9. The prosthetic valve of claim 1, wherein the piezoelectric sensor is integrated into a stent member of the frame assembly.

10. The prosthetic valve of claim 9, wherein the stent member comprises stacked sheets of piezoelectric material.

11. The prosthetic valve of claim 1, wherein the transmitter assembly comprises an antenna coil wrapped around a stiffening band of the frame assembly.

12. The prosthetic valve of any of claims 1 through 11, further comprising a flow sensor configured to sense a flow of blood in the blood flow lumen and generate a flow signal based on the flow.

13. The prosthetic valve of any of claims 1 through 12, further comprising an annular sealing ring, wherein the transmitter assembly comprises a plurality of windings circumferentially wrapped around a core form that runs along a portion of the annular sealing ring.