



### Technical data:

Supply:	10..30VDC, 750mW
Measuring function:	movement distance x, y Range: ±100mm@2Hz, ±2000mm@0,4Hz Resolution: 1mm movement frequency x, y: Range: 0..5Hz, Resolution 0,02Hz
Input/Output:	M12-plug Power Supply & CAN Communication
Communication:	CANopen, 50..500 kBit/s PDO1: movement distance and frequency x,y SDO: spectrum x, y
Temperature range:	-20..+85°
Housing:	Plastic sealed 120x65x55mm
Type of protection:	IP66

The CS2TU measures the tower movement of wind turbines. The measurement can be used for monitoring and recording the operating states and stopping the wind turbines in case of illegal tower movement amplitudes.

The sensor includes a 2 axis acceleration measurement system and an internal signal processing 32-bit micro controller. The sensor measures the acceleration of his mounting plane in x and y axis and analyses it by using a Fourier transformation. The calculated movement distances and frequencies will be transmitted via CAN-bus periodically.

A hybrid cable connection is used for power supply and data communication. The second connector can be used for daisy chaining additional CAN devices.

#### Additional functions:

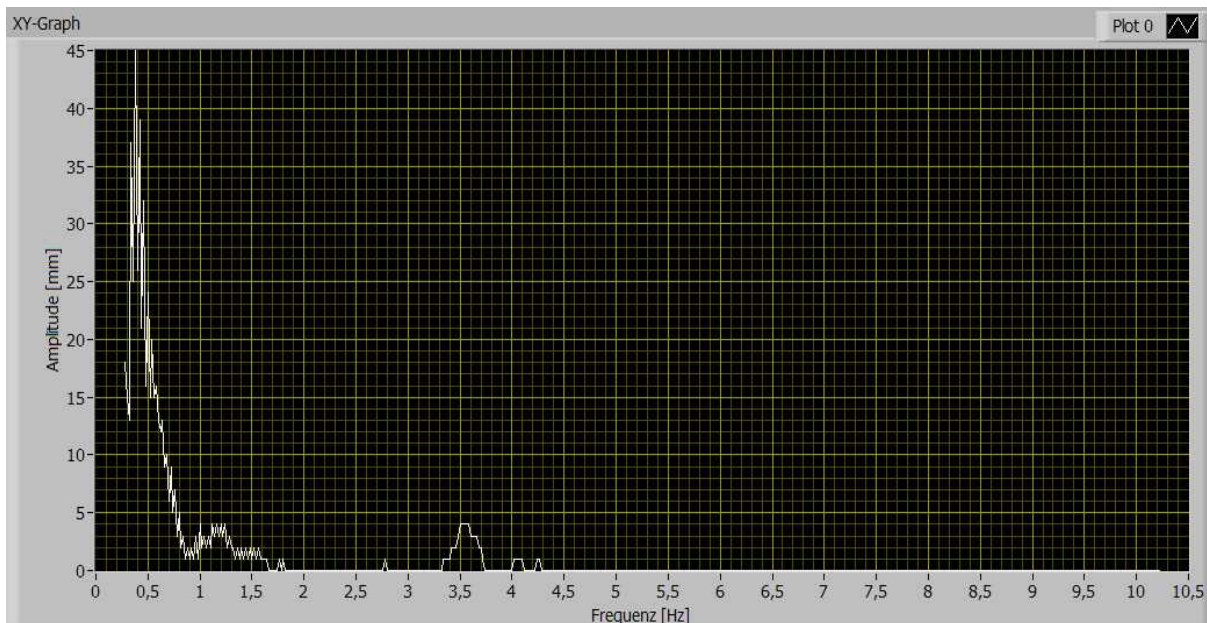
The hardware provides a platform for additional software functions, such as teaching the typical movement frequency (natural frequency) or classifying and saving the results in a memory (histogram memory).

Data output via CANopen on PDO-1 Tx (every 1000ms):

Byte 0, 1	Byte 2, 3	Byte 4, 5	Byte 6, 7
X-axis Frequency in 0,01 Hz	X-axis movement distance in mm	Y-axis Frequency in 0,01 Hz	Y-axis movement distance in mm

For both axes the greatest movement distance of the spectrum and the pertinent frequency are emitted.

In addition to the measurement function of movement distance and frequency, the CS2TU also provides the whole spectrum in the range of 0 ..10 Hz for each axis. The spectrum shows the calculated movement distance ordered by frequency. The resolutions are 0,02 Hz for the frequency and 1 mm for the amplitudes. The 512 coefficients of the spectrum can be accessed by using SDO normal transfer from the sensor and can be displayed by the master or main control unit as shown in the illustration below.



**Further areas of application - measurement of periodical movements at:**

- Buildings (bridges, towers, ...)
- Buildings under periodical stress by water etc.
- Cranes