

## Angle measurement in SoloAssist®

SoloAssist gives surgeons a helping hand by reducing the cost per operation and improving quality

The device resembles an arm and can be moved in several degrees of freedom, whilst noting and maintaining its position. Starting from a calibrated zero point, the device automatically performs the required incremental movements in order to traverse a complete specified movement. An endoscopic camera is guided by the robot arm thereby achieving a 360-degree view with up to 80-degrees incline from the perpendicular of the endoscope.

The arm is largely designed to be MR- and X-ray neutral, which is why sensors are not used in the area directly above the operating table. For this reason, direct measurement of the turning movements of the arm with angle sensors is not possible.

The angle of rotation is therefore determined indirectly by using draw-wire sensors, which are installed underneath the operating table. A total of three MK30 Series sensors are installed, which measure the rotation movements shown in Picture 1. Due to the compact size of the

installation, mounting is easier and reliability improved, Micro-Epsilon's draw-wire sensors are ideal in meeting customer requirements.

The sensors provide a displacement or angle proportional output signal (potentiometer). Alternatively, digital incremental output signals are also possible.

### Benefits to the customer:

- Measurement outside the actual arm
- Very compact design
- Easy integration of the sensor

### Requirements for the measuring system:

- Measuring range: 150mm
- Accuracy: 1mm
- Resolution: 0.1mm

### Suitable sensor series:

WPS-250- MK30-P25

