

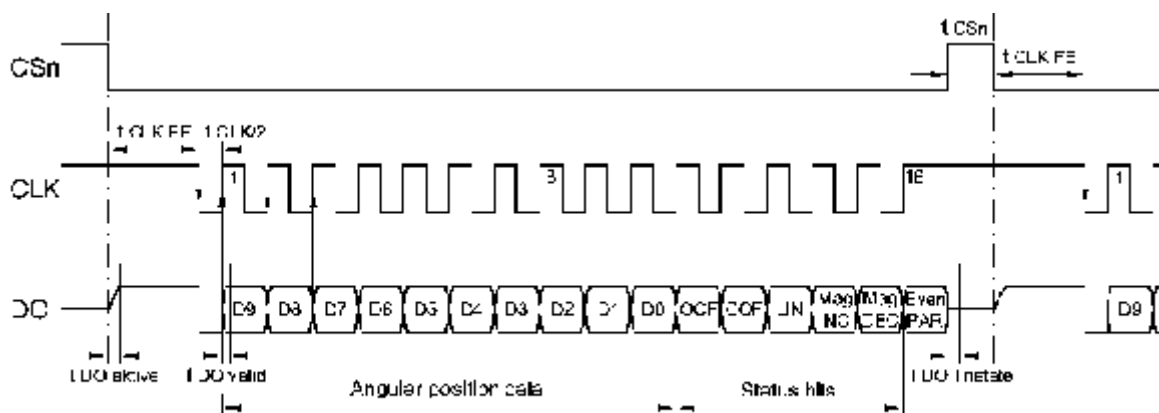
Overview electronic versions for our contactless absolute encoders

Generally there are 6 different output signal versions:

1. "D" -versions : digital output, serial uC interface, SPI uC interface, USB, SSI interface
2. "DX" dual digital output versions (see "dual output" manual)
3. "A" -versions : analogue output, voltage, current
4. "AX" dual analog output versions (see "dual output" manual)
5. "AP" -versions : analogue output and 3 digital inputs. With the digital inputs the sensor can be programmed: angle range, direction of signal output
6. "I" -versions : incremental output

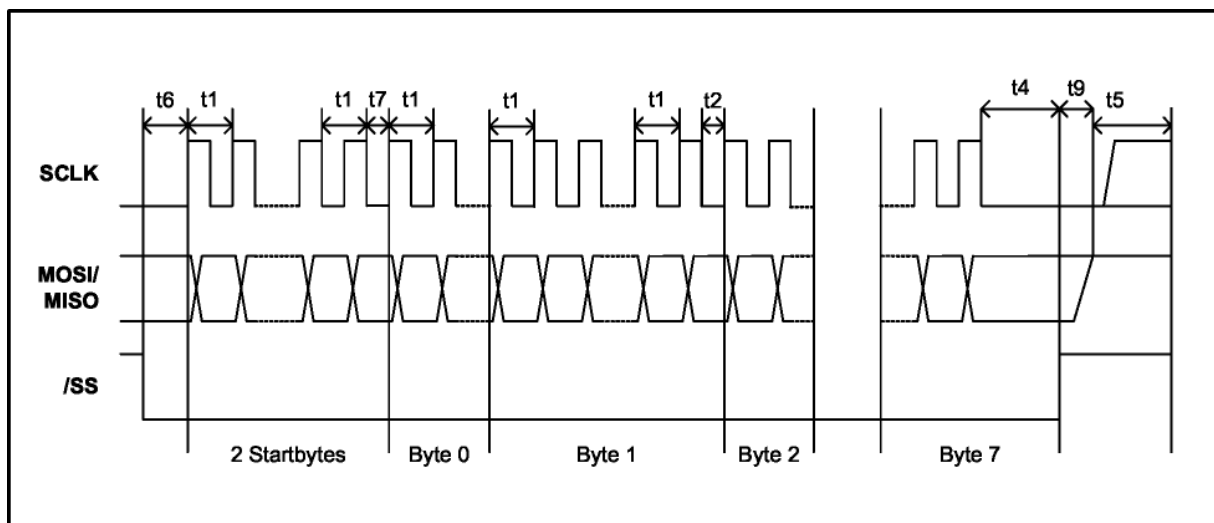
1. "D" versions

- **SER**: synchronous serial uC interface with clock, data and chip select
10HS, 12HS : resolution is 10/12 bit with high speed update rate 0,1ms



Synchronous serial interface with absolute position data

- **SPI**: synchronous serial uC interface with clock, data and chip select
14, 14HS : resolution is 14 bit with an update rate 1ms or 0,2ms (HS version)



- **SSI**: synchronous serial interface with clock and data. This SSI interface is used as a typical absolute encoder interface in the automation industry

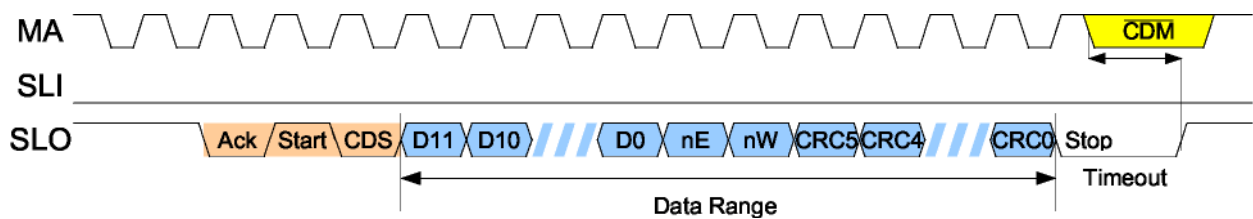


Bild 23: Datenprotokoll

Datenprotokoll

- **USB**: USB interface, the sensor can be directly connected to a USB plug of a PC, no external power supply is needed
12: resolution is 12 bit with a update rate 1ms

2. "A" versions

All analog versions can be programmed with customer specific angles and direction of the output signal. Standard is 360° and clockwise output direction

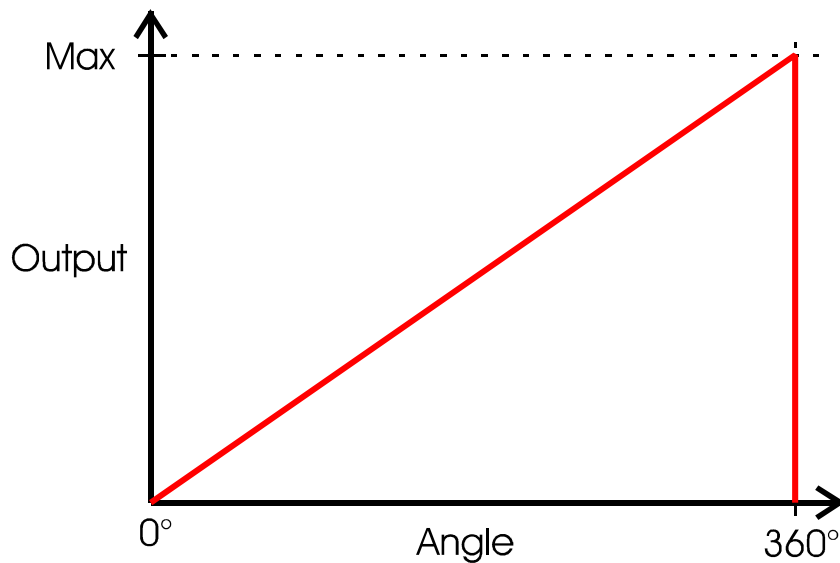
2.1 resolution

- **12** : version with low current consumption, output resolution is 12bit, signal update rate 1ms,
- **12HS** : high speed version, output resolution is 12bit, signal update rate 0,2ms

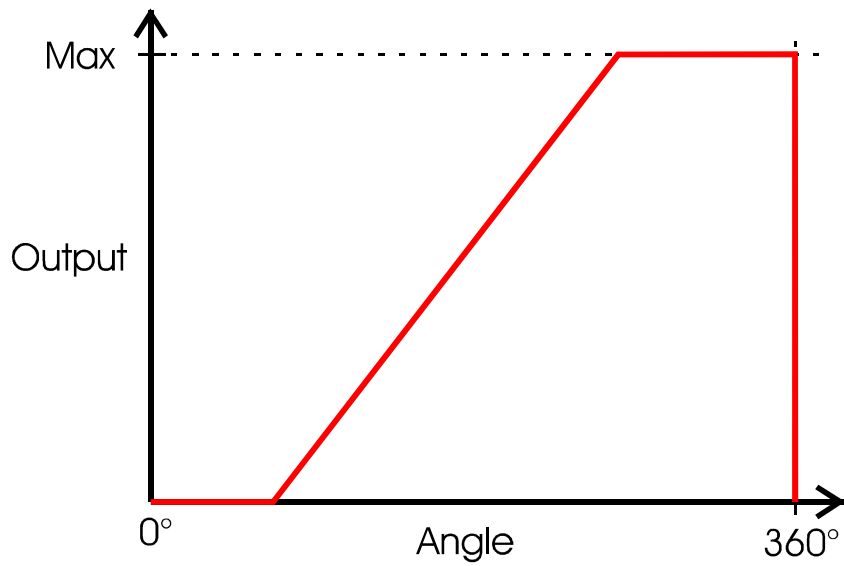
2.2. supply voltage and output signal

- **0505** 5V supply, 0-5V ratiometric output signal
- **2410** 24V supply (15-30V), 0-10V output
- **1205** 12V supply (9-30V), 0-5V output
- **2442** 24V supply (8-30V), 4-20mA output
- **2420** 24V supply (8-30V), 0-20mA output

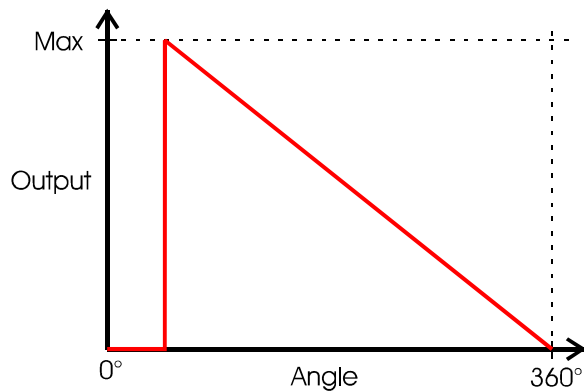
2.3. Examples for different output signals



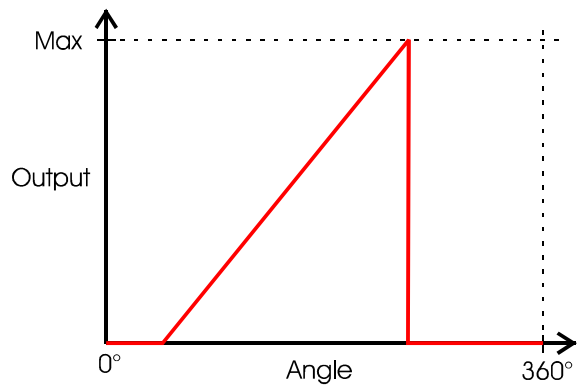
Standard output signal, 360°, clockwise (CW)



Custom output signal, reduced angle, CW, low-high plateaus



custom output, CCW



custom output, low-low plateaus

The development always continues. Please refer to our staff for modifications, options and special versions.

3. "AP" "S" single turn versions

The AP versions have the standard analog output signals and additionally 3 digital inputs. If you connect pushbuttons to the input lines you can program the output signal. You can program the angle with individual zero set point and max set point and the signal direction CW or CCW. The sensor works with an integrated microcontroller. This allows a wide variety of individual output signals and customer specific features. Please note, that the resolution drops with a smaller angle.

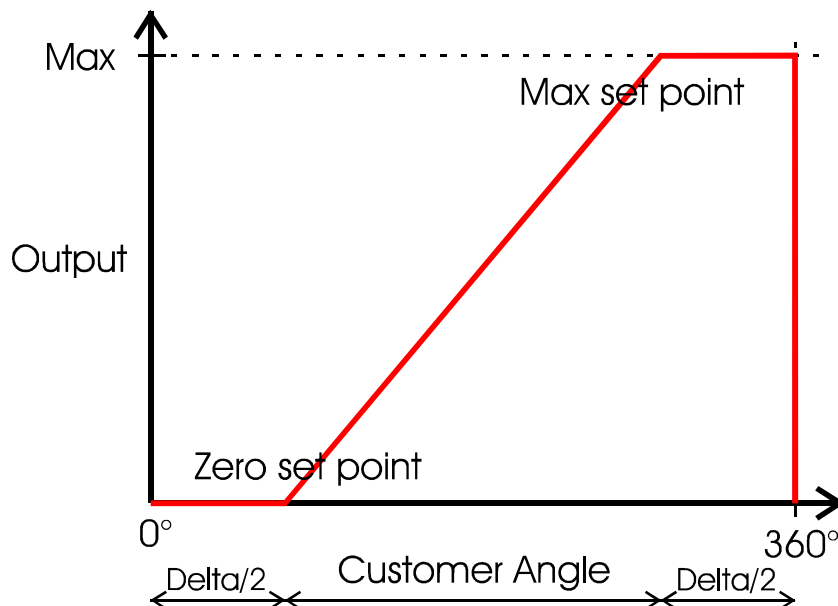
3.1 resolution

- 12 : output resolution is 12bit, signal update rate 1,5 ms

3.2. supply voltage and output signal

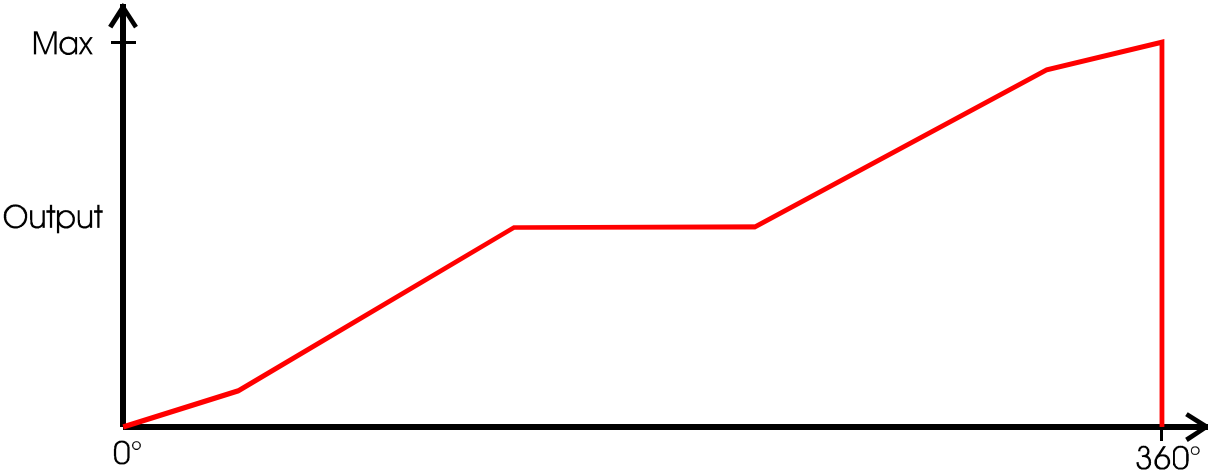
- 0505 5V supply, 0-5V ratiometric output signal
- 2410 24V supply, 0-10V output
- 2442 24V supply, 4-20mA output
- 2420 24V supply, 0-20mA output

3.3. Example for a standard output signal programmed by the customer



Custom output signal, reduced angle, CW, low-high plateaus. The low and high plateaus have always the same length (delta/2), independent from the angle.

3.4. Example for a customer specific output signal



The development always continues. Please refer to our staff for modifications, options and special versions.

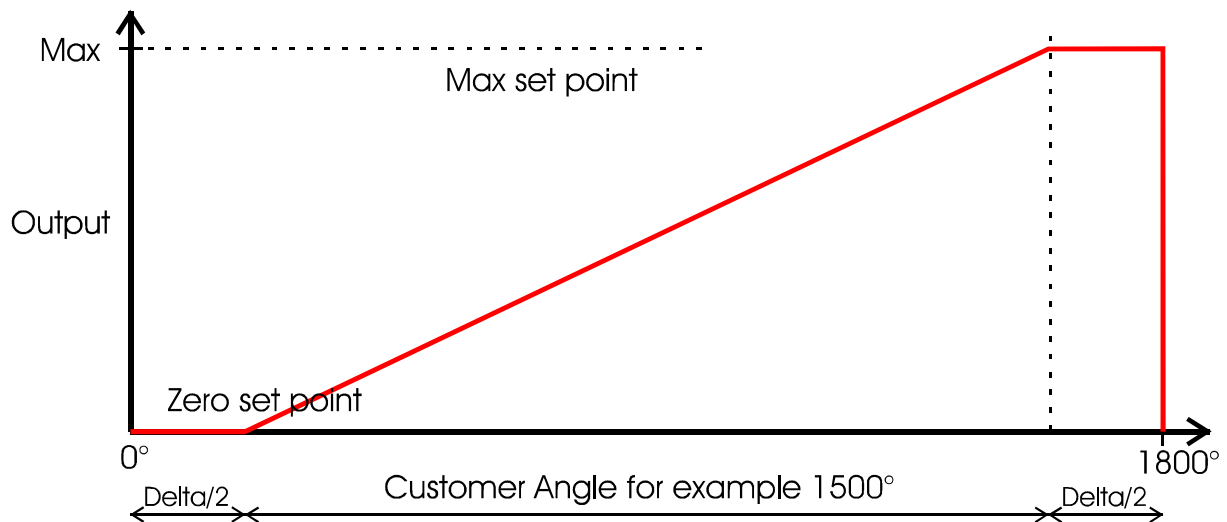
3.5. "AP" "M" multi turn versions

The multi turn versions can be programmed up to 200 rotations. The actual value of the angle is continuously stored during operation in a non volatile memory. If the power is switched of the last value remains stored. Please not, that this system is not a "true power on" system. If the sensor is moved with no power connected the output signal does not show the actual value.

3.6 resolution

- **12** : output resolution is 12bit, signal update rate 3,7 ms

3.7. Example for an output signal programmed by the customer



If the programmed angle does not corresponds with a multiple of a full rotation the difference between the next full rotation and the programmed angle is divided in two equal lengths ($\Delta/2$).

The development always continues. Please refer to our staff for modifications, options and special versions.

4. "I" versions

The "I" versions have an incremental output like conventional encoders. You get A, B, and Z signals. Standard output is open collector.

4.1 resolution

- **256** : standard are 256 pulses, optional 128, 64 and 32 pulses are possible
- **1024** : standard are 1024 pulses, optional 512, 256, 128, and every count between 1-127 are possible

4.2. supply voltage and output signal

- **5V OC** 5V supply, open collector output
- **24V OC** 24V supply, open collector output
- **5V TTL** 5V supply, TTL output
- **24V PP** 24V supply, push pull output

