



## Angle sensor 424S

Angle sensor 424S has a redundant design and, as a result, is suitable for safety-critical measurement tasks. The sensor measures angles between 30° and 120°. Angle sensor 424S is based on the contactless Hall measurement principle, which is extremely reliable and ensures a long service life. The sensor can be used for angle determination in telescopic arms of telescopic handlers and lifting platforms as well as for many other challenging off-highway applications.

- Long lifetime and extremely reliable from contactless measurement with Hall principle
- IP67 protection class for harsh environmental conditions
- High temperature resistance from -40 °C to +85 °C
- Resolution 0.1°
- Current or voltage output signal available
- Switching output (push-pull / high-side / low-side) up to 1.5A
- Available with AMP plug (Micro Quadlock System) or Deutsch plug DT04-6P



IMAGE 2/4

# 424S...

## Deutsch DT06-6S male

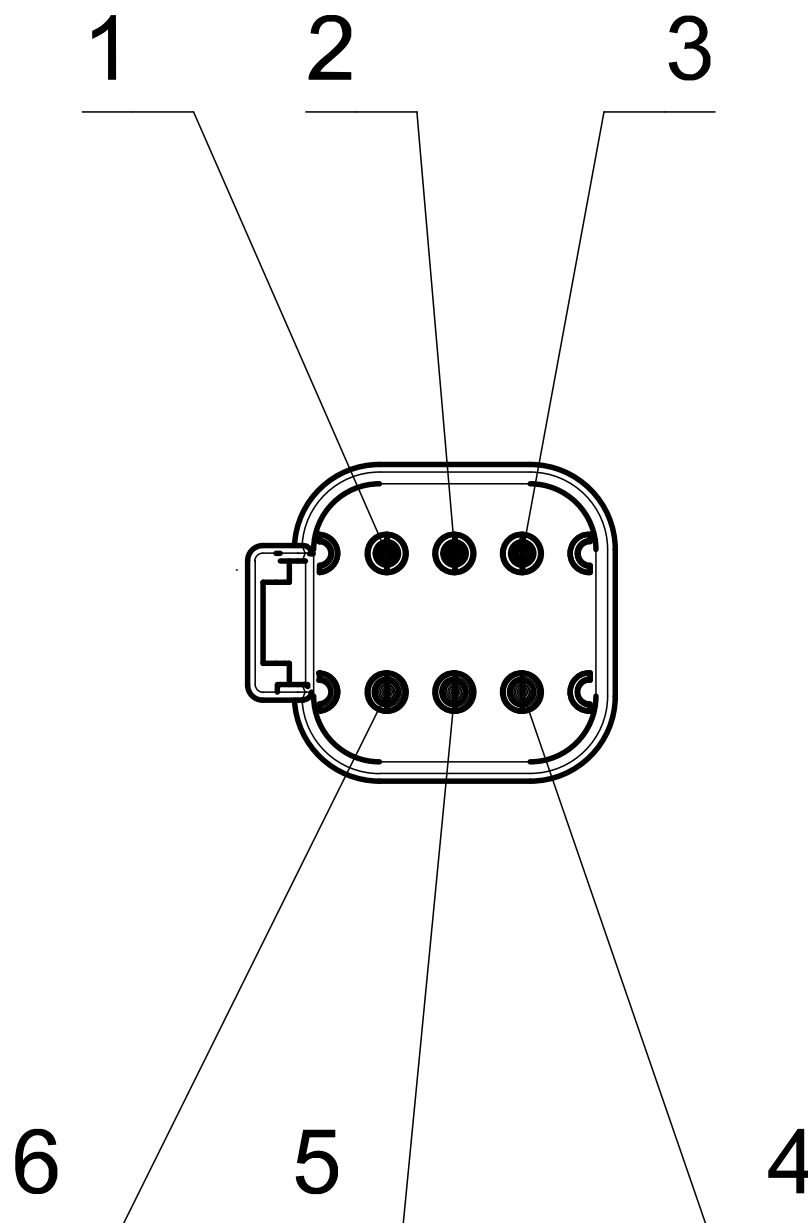


IMAGE 3/4

# 424S...

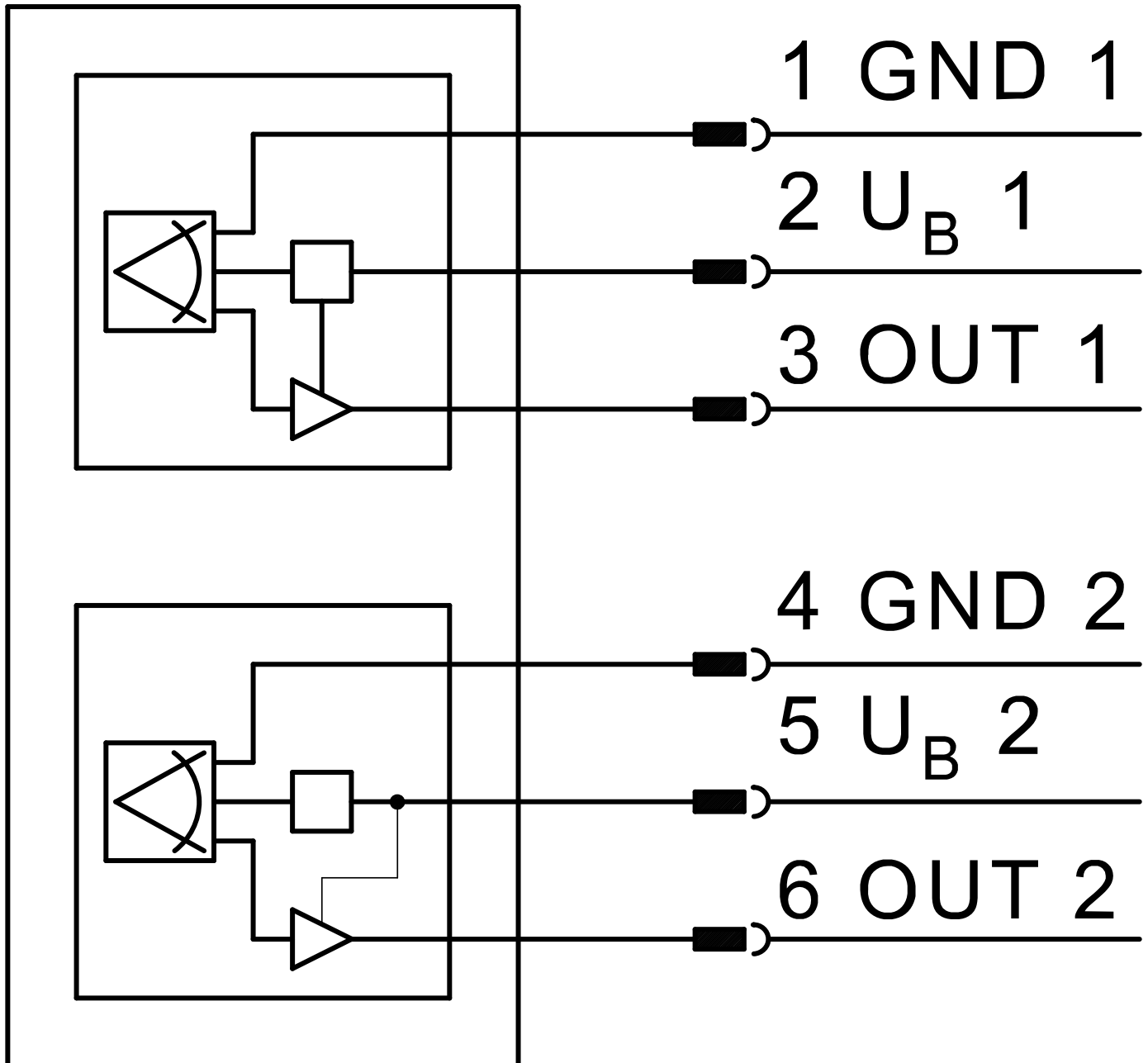
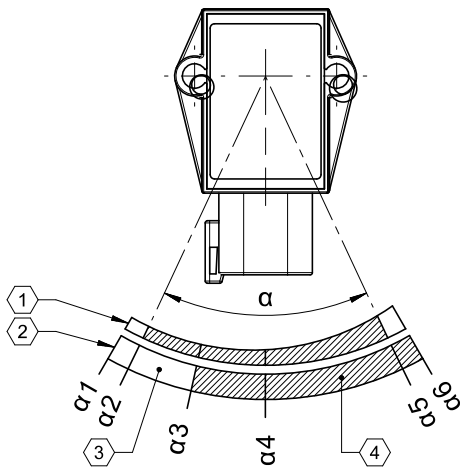


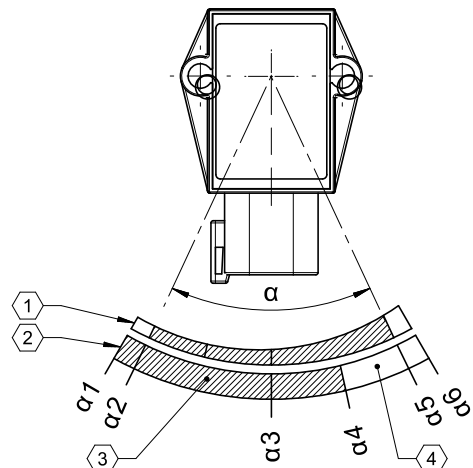
IMAGE 4/4

424S...



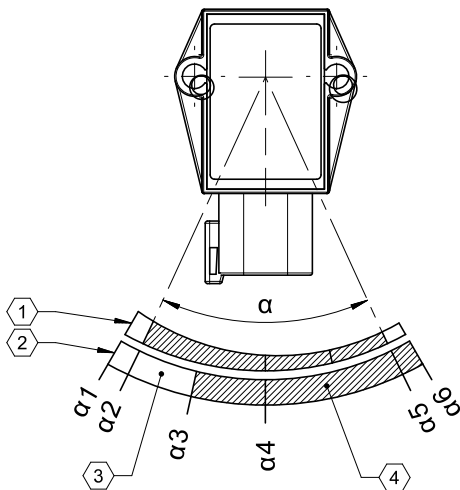
- ① OUT 1: analogue CCW (counter clock wise)
- ② OUT 2: digital output - push pull / high side
- ③ low
- ④ high

424S...



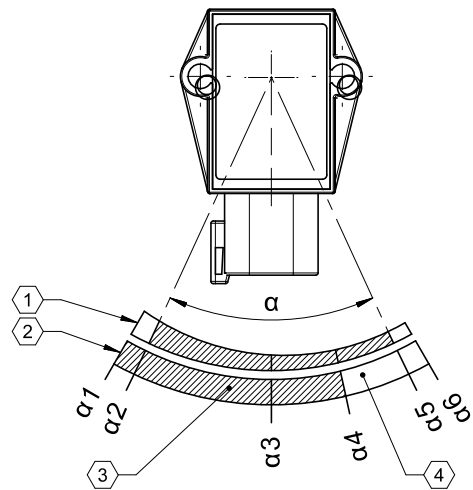
- ① OUT 1: analogue CCW (counter clock wise)
- ② OUT 2: digital output - push pull / low side
- ③ high
- ④ low

424S...



- ① OUT 1: analogue CW (clock wise)
- ② OUT 2: digital output - push pull / high side
- ③ low
- ④ high

424S...



- ① OUT 1: analogue CW (clock wise)
- ② OUT 2: digital output - push pull / low side
- ③ high
- ④ low

## Product options

IMAGE 1/1

### ORDERING KEY

424S								Angle sensor 120°, analogue/switching output
								<b>Connection</b>
	A							AMP connector
	D							Deutsch connector
								<b>Analogue output</b>
			10					<b>1 - 5 V</b>
			11					4 - 20 mA
			16					0.5 - 4.5 V ratiometric
			17					0.5 - 4.5 V
								<b>Switching output</b>
					DH			High-side switch
					DL			Low-side switch
					DS			Push-pull
								<b>Code number (specified by elobau)</b>
						001		3-digit code number
								<b>Accessories</b>
							B	Operating lever mounted
								<b>Selection of angle measuring range <sup>1</sup> (selectable in 5° increments)</b> between 30° and 120°
								xxx°
								<b>Selection of switching point <sup>1</sup> (selectable in 5° increments)</b> between 0° and 120°
								xxx°
								<sup>1</sup> Please specify when ordering.

#### Standard

Optional (on request)

#### Options (on request)

Customer-specific shaft end

Special characteristic curve for output signal

Customised connection

Selection of direction of rotation CCW/CW

Switching output without analogue output

Special angle between 30°-120° (0-120°) ex-works

## Article characteristics

Attribute	424SD11D....	424SD16D....	424SD17D....
Polarity reversal protection	yes		
Output signal min.	-	0.5 V DC	
Output signal max.	-	4.5 V DC	
Output signal min.	4 mA	-	
Output signal max.	20 mA	-	
Output signal - centre position/zero position	-	2.5 V DC	
Output signal - centre position/zero position	12 mA	-	
Output signal - switching point	Selectable (Highside, Lowside, Push-Pull)		
Resolution	0.1 °		
EMC Agricultural and forestry machines (Norm)	EN ISO 14982 pulse 5b: max. voltage 54V (absolute), functional status C for pulse 1 and 4	EN ISO 14982 conducted disturbance not applicable for 5V supply	EN ISO 14982 pulse 5b: max. voltage 54V (absolute), functional status C for pulse 1 and 4
EMC Earth-moving and building construction machinery (Norm)	DIN EN ISO 13766-1 pulse "load dump": max. voltage 54V (absolute)	DIN EN ISO 13766-1 conducted disturbance not applicable for 5V supply	DIN EN ISO 13766-1 pulse "load dump": max. voltage 54V (absolute)
EMC Industrial trucks (Norm)	DIN EN 12895		
Operating voltage min.	9 V DC	4.5 V DC	9 V DC
Operating voltage max.	32 V DC	5.5 V DC	32 V DC
Max. overvoltage	(5min @ 25°C) 36 V DC	5.5 V DC	(5min @ 25°C) 36 V DC
Current consumption	424SD11D.: 17.00 mA 424SD1.DH: 9.00 mA 424SD1.DL: 15.00 mA 424SD1.DS: 15.00 mA	424SD16D.: 9.00 mA 424SD1.DH: 9.00 mA 424SD1.DL: 15.00 mA 424SD1.DS: 15.00 mA	424SD17D.: 17.00 mA 424SD1.DH: 9.00 mA 424SD1.DL: 15.00 mA 424SD1.DS: 15.00 mA
Load resistance min.	-	20000 Ohm	10000 Ohm
Load resistance max.	9V: 150 Ohm > 12V: 350 Ohm	-	
Temperature coefficient	typ. +- 250 ppm/K		
Typical linearity error	= ±15°:±0,2° = ±25°:±0,4° = ±35°:±1,0° = ±45°:±2,0° = ±60°:±5,0°		
Signal sequence	CCW (CW on request)		
Signal update rate	2000 Hz		
Outputs (quantity, type)	2		
Max. switching current	Highside / Lowside: 1500 mA Push-Pull: 0,25 mA		

## Article characteristics

Attribute	424SD11D....	424SD16D....	424SD17D....
Technology	Hall		
Angle measuring range - analogue output	30° - 120° (selectable in 5° increments)		
Angle range - switching output	0° - 120° (Selectable in 5° increments)		
Outputs	4...20mA + switching output	0,5...4,5V ratiometric + Switching output	0,5...4,5V + Switching output
MTTF	424SD11D.: 72.2 a 424SD1.DH: 78.4 a 424SD1.DL: 87.1 a 424SD1.DS: 113.0 a	424SD16D.: 111.9 a 424SD1.DH: 78.4 a 424SD1.DL: 87.1 a 424SD1.DS: 113.0 a	424SD17D.: 79.6 a 424SD1.DH: 78.4 a 424SD1.DL: 87.1 a 424SD1.DS: 113.0 a
Max. shaft load, axial	50 N		
Max. shaft load, radial	100 N		
Bearing	Ball bearing		
Mechanical stop	Optional		
Actuating lever	Optional (Accessories: 350210)		
Protection class	IP67 DIN EN 60529 / IPX9K ISO 20653		
Operating temperature min.	-40 °C		
Max. operating temperature	85 °C		
Min. storage temperature	-40 °C		
Max. storage temperature	105 °C		
Torque for fastening screws	2.5 N m		
Connector type	Deutsch DT04-6P		