

**Type DR-2112, Type DR-2112-R**

**Torque sensor, analog output**

- Active output signal  $\pm 5V$
- Sample rate 10 kSample

**Type DR-2412, Type DR-2412-R**

**Miniatur torque sensor, RS485-interface**

- RS485 interface
- Auto identification of: measuring range, serial number, date of calibration
- Sample rate 4 kSample



Both types have a contactless and digital signal transmission from shaft to case, that means no failure of transmission and maintenance free.

| Artikel-Nr.<br>Art. No.<br>DR-2112, | Artikel-Nr.<br>Art. No.<br>DR-2412 | nominal torque<br>[Nm] | max. speed<br>[min <sup>-1</sup> ] |         | spring rate<br>[Nm/rad] | moment of inertia<br>J in [kg m <sup>2</sup> ] |                     | Axial max. thrust load<br>[N] |
|-------------------------------------|------------------------------------|------------------------|------------------------------------|---------|-------------------------|--|---------------------|-------------------------------|
|                                     |                                    |                        | standard                           | special |                         | drive side                                     | test side           |                               |
| 103069                              | 104137                             | 0,03                   | 10000                              | 15000   | $3,2 \cdot 10^{-1}$     | $1,5 \cdot 10^{-6}$                            | $1,7 \cdot 10^{-7}$ | 10                            |
| 103795                              | 104138                             | 0,05                   | 10000                              | 15000   | $5,9 \cdot 10^{-1}$     | $1,5 \cdot 10^{-6}$                            | $1,7 \cdot 10^{-7}$ | 10                            |
| 102570                              | 104139                             | 0,1                    | 10000                              | 15000   | 1,0                     | $1,9 \cdot 10^{-6}$                            | $2,8 \cdot 10^{-7}$ | 15                            |
| 101930                              | 104140                             | 0,2                    | 10000                              | 15000   | 1,0                     | $1,9 \cdot 10^{-6}$                            | $2,8 \cdot 10^{-7}$ | 20                            |
| 101709                              | 104141                             | 0,5                    | 10000                              | 15000   | 9,9                     | $1,9 \cdot 10^{-6}$                            | $2,8 \cdot 10^{-7}$ | 30                            |
| 101597                              | 104142                             | 1                      | 10000                              | 15000   | 9,9                     | $1,9 \cdot 10^{-6}$                            | $2,8 \cdot 10^{-7}$ | 40                            |
| 102348                              | 104143                             | 2                      | 10000                              | 15000   | $3,6 \cdot 10^2$        | $1,9 \cdot 10^{-6}$                            | $2,9 \cdot 10^{-7}$ | 50                            |
| 101840                              | 104144                             | 5                      | 10000                              | 15000   | $6,5 \cdot 10^2$        | $1,9 \cdot 10^{-6}$                            | $3,0 \cdot 10^{-7}$ | 50                            |
| 102761                              | 104145                             | 10                     | 10000                              | 15000   | $8,5 \cdot 10^2$        | $2,1 \cdot 10^{-6}$                            | $3,9 \cdot 10^{-7}$ | 50                            |
| 101922                              | 104146                             | 15                     | 10000                              | 15000   | $8,5 \cdot 10^2$        | $2,1 \cdot 10^{-6}$                            | $3,9 \cdot 10^{-7}$ | 100                           |
| 102263                              | 104147                             | 20                     | 8000                               | 15000   | $4,5 \cdot 10^3$        | $1,2 \cdot 10^{-5}$                            | $9,9 \cdot 10^{-6}$ | 300                           |
| 102111                              | 104148                             | 30                     | 8000                               | 15000   | $4,5 \cdot 10^3$        | $1,2 \cdot 10^{-5}$                            | $9,9 \cdot 10^{-6}$ | 1000                          |
| 102451                              | 104149                             | 50                     | 6000                               | 15000   | $8,5 \cdot 10^3$        | $1,3 \cdot 10^{-5}$                            | $1,2 \cdot 10^{-5}$ | 1600                          |
| 101979                              | 104150                             | 100                    | 6000                               | 12000   | $8,5 \cdot 10^3$        | $1,3 \cdot 10^{-5}$                            | $1,2 \cdot 10^{-5}$ | 2600                          |
| 102177                              | 104151                             | 200                    | 6000                               | 12000   | $6,7 \cdot 10^4$        | $1,0 \cdot 10^{-4}$                            | $9,0 \cdot 10^{-5}$ | 3200                          |
| 102316                              | 104152                             | 500                    | 5000                               | 10000   | $7,8 \cdot 10^4$        | $1,0 \cdot 10^{-4}$                            | $9,2 \cdot 10^{-5}$ | 7500                          |
| 103652                              | 104153                             | 1000                   | 4000                               | 7000    | $3,1 \cdot 10^5$        | $1,6 \cdot 10^{-3}$                            | $1,1 \cdot 10^{-3}$ | 10000                         |
| 103349                              | 104154                             | 2000                   | 3500                               | 5500    | $7,2 \cdot 10^5$        | $5,3 \cdot 10^{-3}$                            | $4,3 \cdot 10^{-3}$ | 18000                         |
| 103797                              | 104155                             | 5000                   | 3500                               | 5500    | $8,0 \cdot 10^5$        | $5,4 \cdot 10^{-3}$                            | $4,3 \cdot 10^{-3}$ | 32000                         |
| 105483                              | 105871                             | 10000                  | 3000                               | 5000    | $1,2 \cdot 10^6$        | $4,1 \cdot 10^{-2}$                            | $3,9 \cdot 10^{-2}$ | 125000                        |
| 105484                              | 105872                             | 20000                  | 3000                               | 5000    | $2,1 \cdot 10^6$        | $4,1 \cdot 10^{-2}$                            | $4,3 \cdot 10^{-2}$ | 200000                        |

| Artikel-Nr.<br>Art. No.<br>DR-2112-R | Artikel-Nr.<br>Art. No.<br>DR-2412-R | Messbereich<br>nominal torque<br>[Nm] | max.<br>Drehzahl<br>max.<br>speed<br>[min <sup>-1</sup> ] |                   | Federkonstante<br>springrate<br>[Nm/rad] | Massen-<br>trägheits-<br>moment<br>moment of<br>inertia<br>J in [kg<br>m <sup>2</sup> ] |                        | zul. Axiallast<br>max. thrust load<br>[N] |
|--------------------------------------|--------------------------------------|---------------------------------------|---|-------------------|--|---|------------------------|---|
|                                      |                                      |                                       | Standard<br>standard                                      | Sonder<br>special |  | Antriebsseite<br>drive side   | Messseite<br>test side |   |
| 108678                               | 108708                               | 0,1                                   | 10000   | 15000             | 1,0                                      | 1,9·10 <sup>-6</sup>  | 2,8·10 <sup>-7</sup>   | 15  |
| 108679                               | 108709                               | 0,2                                   | 10000   | 15000             | 1,0                                      | 1,9·10 <sup>-6</sup>  | 2,8·10 <sup>-7</sup>   | 20  |
| 108680                               | 108710                               | 0,5                                   | 10000   | 15000             | 9,9                                      | 1,9·10 <sup>-6</sup>  | 2,8·10 <sup>-7</sup>   | 30  |
| 108681                               | 108711                               | 1                                     | 10000   | 15000             | 9,9                                      | 1,9·10 <sup>-6</sup>  | 2,8·10 <sup>-7</sup>   | 40  |
| 108682                               | 108712                               | 2                                     | 10000   | 15000             | 3,6·10 <sup>2</sup>                      | 1,9·10 <sup>-6</sup>  | 2,9·10 <sup>-7</sup>   | 50  |
| 108683                               | 108713                               | 5                                     | 10000   | 15000             | 6,5·10 <sup>2</sup>                      | 1,9·10 <sup>-6</sup>  | 3,0·10 <sup>-7</sup>   | 50  |
| 108684                               | 108714                               | 10                                    | 10000   | 15000             | 8,5·10 <sup>2</sup>                      | 2,1·10 <sup>-6</sup>  | 3,9·10 <sup>-7</sup>   | 50  |
| 108685                               | 108715                               | 15                                    | 10000   | 15000             | 8,5·10 <sup>2</sup>                      | 2,1·10 <sup>-6</sup>  | 3,9·10 <sup>-7</sup>   | 100                                       |
| 108686                               | 108716                               | 20                                    | 8000  | 15000             | 4,5·10 <sup>3</sup>                      | 1,2·10 <sup>-5</sup>  | 9,9·10 <sup>-6</sup>   | 300                                       |
| 108687                               | 108717                               | 30                                    | 8000  | 15000             | 4,5·10 <sup>3</sup>                      | 1,2·10 <sup>-5</sup>  | 9,9·10 <sup>-6</sup>   | 1000                                      |
| 108688                               | 108718                               | 50                                    | 6000  | 15000             | 8,5·10 <sup>3</sup>                      | 1,3·10 <sup>-5</sup>  | 1,2·10 <sup>-5</sup>   | 1600                                      |
| 108689                               | 108719                               | 100                                   | 6000  | 12000             | 8,5·10 <sup>3</sup>                      | 1,3·10 <sup>-5</sup>  | 1,2·10 <sup>-5</sup>   | 2600                                      |
| 108690                               | 108720                               | 200                                   | 6000  | 12000             | 6,7·10 <sup>4</sup>                      | 1,0·10 <sup>-4</sup>  | 9,0·10 <sup>-5</sup>   | 3200                                      |
| 108691                               | 108721                               | 500                                   | 5000  | 10000             | 7,8·10 <sup>4</sup>                      | 1,0·10 <sup>-4</sup>  | 9,2·10 <sup>-5</sup>   | 7500                                      |
| 108692                               | 108722                               | 1000                                  | 4000  | 7000              | 3,1·10 <sup>5</sup>                      | 1,6·10 <sup>-3</sup>  | 1,1·10 <sup>-3</sup>   | 10000                                     |



**Specifications**

**Analog**

**RS485-Interface**

| Type                             |          | DR-2112,<br>(DR-2112-R)                 | DR-2412<br>(DR-2412-R) |
|----------------------------------|----------|---|------------------------|
| accuracy class                   | % v.E    | 0,1 (0,2)                               |                        |
| DIN 1319 - nonrepeatability      | %        | ±0,02 (±0,04)                           |                        |
| supply voltage                   | VDC      | 12 ... 28                               |                        |
| supply current                   | mA       | <60                                     |                        |
| output signal                    |          | ±0 ... 5V                               | ±15 Bit (±11 Bit)      |
| output current max               | mA       |   |                        |
| calibration control              | V        | short circuit resist.<br>L <2,0; H >3,5 | per Software           |
| sample rate                      | kSample  | 10                                      |                        |
| sample rate mode 1 (115KBd)      | kSample  |   | 4                      |
| sample rate mode 2 (115KBd)      | kSample  |   | 2                      |
| sample rate mode 3 (115KBd)      | kSample  |   | 1                      |
| sample rate mode 4 (115KBd)      | kSample  |   | 0,5                    |
| nominal temp. range              | °C       | +5 ... +45                              |                        |
| service temp. range              | °C       | 0 ... +60                               |                        |
| temp. coeff. of sensitivity      | % v.E./K | ±0,01 (±0,015)                          |                        |
| temp. coeff. of zero             | % v.E./K | ±0,02 (±0,03)                           |                        |
| (statisch) - service torque      | % v.E.   | 150                                     |                        |
| (statisch) - limit torque        | % v.E.   | 200                                     |                        |
| (statisch) - ultimate torque     | % v.E.   | >300                                    |                        |
| bandwidth (DIN 50100)            | %        | 70 - (top - top)                        |                        |
| level of protection (DIN 40 050) |          | IP 50                                   |                        |
| connector                        |          | 8-polig / 12-polig – 8-pin / 12-pin     |                        |

**Artikel Nr. Option - options**

|        |   |   |  |  |
|--------|---|---|--|--|
| 101560 | angle control 360 impulses ,2 tracks, 90°-shifted |   | CW - turn  |  |
| 104097 | ≥ 2000 Nm : 1xTTL – 60 imp, 1 track               |   | CH A <br>CH B  |  |
| 103562 | output signal                                     | V | ± 0 ... 10   |  |

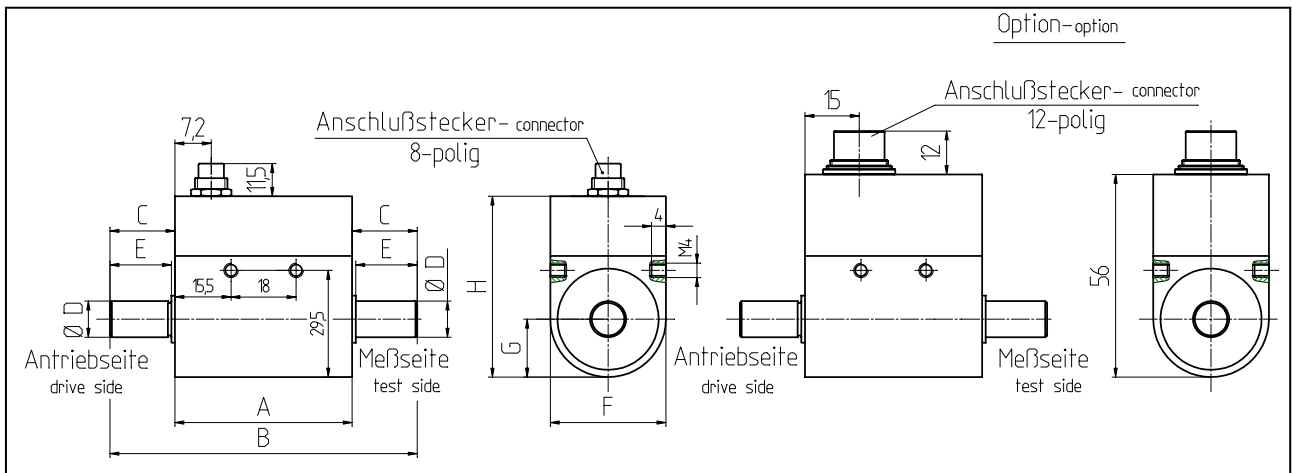
**Connections**

| 8-pin |                  | DR-2112, DR-2112-R |
|-------|------------------|--------------------|
| Pin 1 | excitation (+)   | 12 ... 28 V        |
| Pin 2 | excitation (GND) | 0 V                |
| Pin 3 | signal (+)       | ± 5 V              |
| Pin 4 | signal (GND)     | 0                  |
| Pin 5 | cal. control     | L < 2,0V; H > 3,5V |
| Pin 6 | Option angle A   | TTL                |
| Pin 7 | Option angle B   | TTL                |
| Pin 8 | NC               | -                  |

| 12-pin | DR-2112, DR-2112-R | DR-2412, DR-2412-R |
|--------|--------------------|--------------------|
| Pin A  | NC                 | NC                 |
| Pin B  | Option angle B     | angle B            |
| Pin C  | signal (+)         | ±5 V               |
| Pin D  | signal (GND)       | 0 V                |
| Pin E  | excitation (GND)   | excitation (GND)   |
| Pin F  | excitation (+)     | 12 ... 28 V        |
| Pin G  | Option angle A     | Option angle A     |
| Pin H  | NC                 | NC                 |
| Pin J  | NC                 | RS 485             |
| Pin K  | cal. control       | L < 2,0V; H > 3,5V |
| Pin L  | NC                 | RS 485             |
| Pin M  | housing            | housing            |

**Dimensions**

**DR-2112, DR-2112-R; DR-2412, DR-2412-R**



| nominal torque<br>[Nm]     | dimensions<br>[mm] |    |    |       |    |    |    |    |
|----------------------------|--------------------|----|----|-------|----|----|----|----|
|                            | A                  | B  | C  | D     | E  | F  | G  | H  |
| 0,03*<br>0,05*             | 49                 | 65 | 8  | 6 g6  | 7  | 32 | 16 | 50 |
| 0,1; 0,2<br>0,5; 1<br>2; 5 | 49                 | 85 | 18 | 8 g6  | 17 | 32 | 16 | 50 |
| 10<br>15                   | 49                 | 85 | 18 | 10 g6 | 17 | 32 | 16 | 50 |

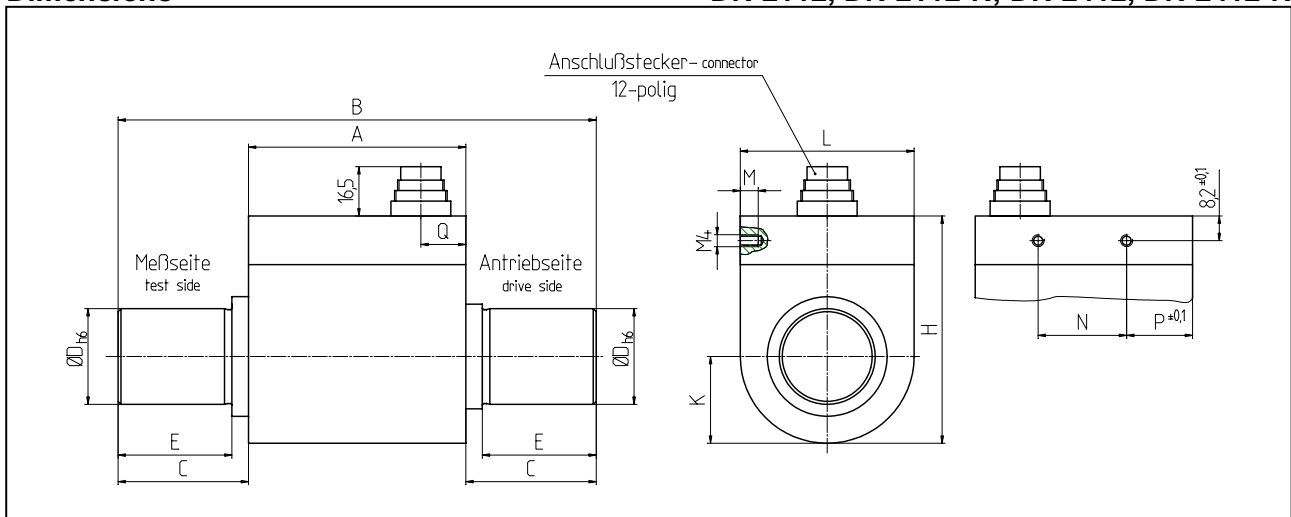
\*only for DR-2112 and DR-2412 available



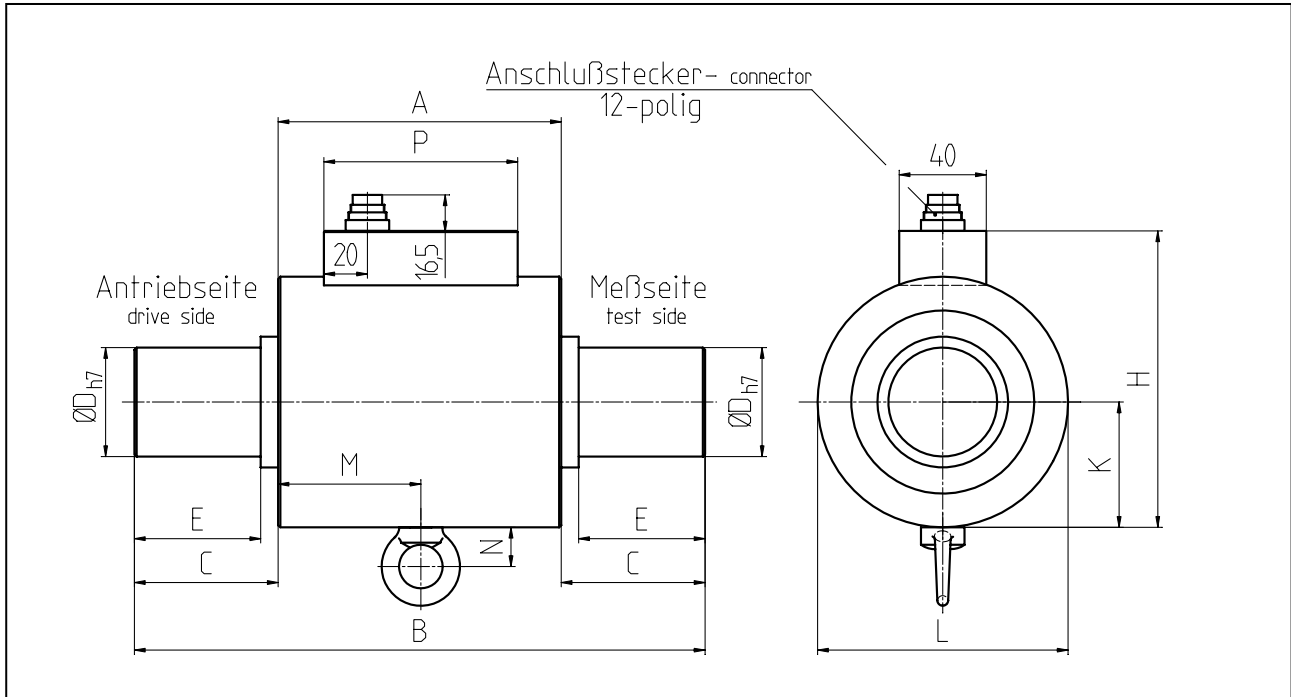
**DR-2112-200Nm with 1/2 flexible coupling free floating**

**Dimensions**

**DR-2112, DR-2112-R; DR-2412, DR-2412-R**



| nominal torque<br>[Nm] | dimensions<br>[mm] |       |      |       |    |    |    |    |   |      |    |    |
|------------------------|--------------------|-------|------|-------|----|----|----|----|---|------|----|----|
|                        | A                  | B     | C    | D     | E  | H  | K  | L  | M | N    | P  | Q  |
| 20<br>30               | 71,5               | 111,5 | 20   | 18 h6 | 18 | 59 | 20 | 40 | 5 | 41,5 | 15 | 12 |
| 50<br>100              | 71,5               | 147,5 | 38   | 18 h6 | 36 | 59 | 20 | 40 | 5 | 41,5 | 15 | 12 |
| 200<br>500             | 72,5               | 159,5 | 43,5 | 32 h6 | 38 | 76 | 29 | 58 | 6 | 29,5 | 22 | 15 |



| nominal torque<br>[Nm] | dimensions [mm] |     |     |        |     |     |      |     |      |    |    |
|------------------------|-----------------|-----|-----|--------|-----|-----|------|-----|------|----|----|
|                        | A               | B   | C   | D      | E   | H   | K    | L   | M    | N  | P  |
| 1000                   | 130             | 262 | 66  | 50 h7  | 58  | 136 | 57,5 | 115 | 65,5 | 18 | 89 |
| 2000*                  | 135             | 377 | 121 | 70 h7  | 110 | 161 | 69,5 | 139 | 67,5 | 18 | 89 |
| 5000*                  | 135             | 377 | 121 | 70 h7  | 110 | 161 | 69,5 | 139 | 67,5 | 18 | 89 |
| 10000*                 | 170             | 470 | 140 | 110 h7 | 120 | 233 | 104  | 208 | 95   | 18 | 89 |
| 20000*                 | 170             | 470 | 140 | 110 h7 | 120 | 233 | 104  | 208 | 95   | 18 | 89 |

\*only for DR-2112 and DR-2412 available



**DR-2112-1000Nm shown with custom made flange to fit customers couplings**