HÜBNER Tachogenerators and Combinations and their Key Data

HÜBNER clearly identifies all its devices mechanically and electrically by the **serial number**. When reordering, please always state the serial number in addition to the type designation.

The following pages provide an **overview of the key data** of HÜBNER tachogenerators and combinations.

Detailed **leaflets** of the individual devices are available on request.

If you cannot find the solution best suited to your application – please ask us. The majority of the devices are of a modular design, enabling **specific customer requirements** to be met in most cases.

HÜBNER devices have a specific **type designation**.
The **mechanical** execution of the tachogenerators is distinguished as follows:

- **TDP**: **T**achogenerator with permanent magnets, own bearings of the shaft (Exception: TDP 0,5 – HÜBNER's and Europe's first hollow-shaft tachogenerator).
- **GT**: **T**achogenerator with hollow-shaft (standard range).
- **HTA**: **H**ollow-shaft **T**achogenerator for external mounting (special tachogenerators).
- **1st digit**: Series (for hollow-shaft tachogenerators, guide value for the housing diameter in cm).
- **2nd digit**: For hollow-shafts, guide value for the armature core width in mm.

The **electrical** execution of the tachogenerators is characterized as follows:

- **L**: **L**ongLife® technology.
- **LT-x**: **x** is the code number for the voltage gradient for (two-pole) tachogenerators with own bearings.
- **L/4xx**: **xx** indicates the voltage gradient for (four-pole) hollow-shaft tachogenerators.

- **Example**:
  TDP 0,2 LT-4 → LongLife® tachogenerator with own bearings, voltage gradient (digit 4 according to leaflet) 60 mV/rpm.

  GT 7.08 L/420 → Hollow-shaft tachogenerator with about 7 cm housing diameter, about 8 mm armature core width, LongLife® Technology, four-pole, voltage gradient 20 mV/rpm.

The designation of the **combinations** is made up of the primary device with own bearings and the mounted supplementary device:

- **Example**:
  TDP 0,2 + OG 9 → Abbreviated designation of a combination of Analog-Tacho TDP 0,2 and Digital-Tacho (incremental encoder) OG 9.
  The full ordering designation indicates for the Analog- and Digital-Tacho the electrical version, in this example **TDP 0,2 LT-4 + OG 9 DN 1024**, and accordingly indicates the tachogenerator voltage (**-4 →** 60 mV/rpm) and the type and number of squarewave pulses (1,024 pulses per turn, dual channel with signals displaced by 90°, marker pulse).

Further information is provided in our leaflets and publication
Information for the User – 20 Years Competence in HeavyDuty

Digital-Tachos (Incremental Encoders)
Sinus-Tachos (Sinewave Encoders)

which is available on our website *www.huebner-berlin.de* or can be sent to you on request.

HÜBNER Hollow-shaft Tachos and their Key Data

GT 3

Voltage:	5 mV/rpm	Hollow-shaft:	∅ 6 mm
Temp. coefficient:	-0.035 %/K	Max. Speed:	10,000 rpm
Ripple:	≤ 1.2 % pp	Moment of inertia:	9 gcm²
Time constant:	2 µs	Weight rotor:	approx. 20 g
Power:	0.025 W	Housing:	∅ 34 mm
		Protection:	IP 00; 54
Option:	Flange ∅ 45 mm		

GT 5

Voltage:	7; 9.5; 10 mV/rpm	Hollow-shaft:	∅ 8; 12 mm; ½"
Temp. coefficient:	±0.005 %/K	Max. speed:	10,000 rpm
Ripple:	≤ 0.7 % pp	Moment of inertia:	50 gcm²
Time constant:	4.5 µs	Weight rotor:	approx. 50 g
Power:	0.075 W	Housing:	∅ 52 mm
		Protection:	IP 00; 54
GTL 5:	own bearings		

GT 7

Voltage:	10 → 60 mV/rpm	Hollow-shaft:	∅ 12; 14; 15; 16 mm
Temp. coefficient:	±0.005 %/K	Max. speed:	9,000 → 6,100 rpm
Ripple:	≤ 0.6 % pp	Moment of inertia:	0.4; 0.6 kgcm²
Time constant:	4 µs	Weight rotor:	approx. 110; 160 g
Power:	0.3; 0.6 W	Housing:	∅ 70 mm
		Protection:	IP 55
GTF 7:	EURO flange® B10		

GT 9

Voltage:	10; 20 mV/rpm	Hollow-shaft:	∅ 12; 16 mm; cone
Temp. coefficient:	±0.005 %/K	Max. speed:	9,000 rpm
Ripple:	≤ 0.5 % pp	Moment of inertia:	0.95 kgcm²
Time constant:	9 µs	Weight rotor:	approx. 155 g
Power:	0.3 W	Housing:	∅ 90 mm
		Protection:	IP 00; 44
Built-in tachogenerator			

HÜBNER Hollow-shaft Tachos and their Key Data

GTB 9

Voltage:	10; 20 mV/rpm
Temp. coefficient:	±0.005 %/K
Ripple:	≤ 0.5 % pp
Time constant:	9 µs
Power:	0.3 W

External mounting

Hollow-shaft:	∅ 12; 16 mm; cone
Max. speed:	9,000 rpm
Moment of inertia:	0.95 kgcm²
Weight rotor:	approx. 155 g
Housing:	∅ 90 mm
Protection:	IP 68

GTR 9

Voltage:	10 → 60 mV/rpm
Temp. coefficient:	±0.005 %/K
Ripple:	≤ 0.4 % pp
Time constant:	5 µs
Power:	0.9 W

Successor type for TDP 0,5

Hollow-shaft:	∅ 16 mm
Max. speed:	9,000 → 6,000 rpm
Moment of inertia:	1.95 kgcm²
Weight rotor:	approx. 490 g
Housing:	∅ 95 mm
Protection:	IP 56

GT 16

Voltage:	60; 100 mV/rpm
Temp. coefficient:	±0.005 %/K
Ripple:	≤ 0.7 % pp
Time constant:	7 µs
Power:	1.8 W

Hollow-shaft:	∅ 40 → 70 mm
Max. speed:	3,000 rpm
Moment of inertia:	61 → 50 kgcm²
Weight rotor:	approx. 3.6 → 2.3 kg
Housing:	∅ 158 mm
Protection:	IP 40

HÜBNER Tachos with own bearings and their Key Data

TDP 0,03

Voltage:	7; 20 mV/rpm
Temp. coefficient:	-0.02 %/K
Ripple:	≤ 1.8 % pp
Time constant:	20 µs
Power:	0.14; 0.32 W

Flange:	∅ 44 mm ≙ 1 3/4"
Shaft:	∅ 4.73 mm ≙ 3/16"
Max. speed:	12,000; 9,100 rpm
Moment of inertia:	12; 21 gcm²
Weight:	approx. 0.15; 0.23 kg
Protection:	IP 44

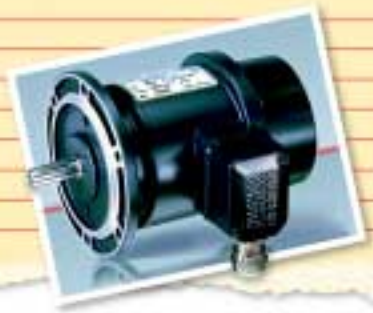
TDP 0,09

Voltage:	10 → 60 mV/rpm
Temp. coefficient:	±0.005 %/K
Ripple:	≤ 0.55 % pp
Time constant:	25 µs
Power:	1.2 W
Options:	Foot mounting
	Climate protection
	Twin Tacho **TDPZ 0,09** page 43

Flange:	∅ 85 mm
Shaft:	∅ 6 mm
Max. speed:	10,000 → 6,700 rpm
Moment of inertia:	0.25 kgcm²
Weight:	approx. 1.2 kg
Protection:	IP 56

TDP 0,2 LT

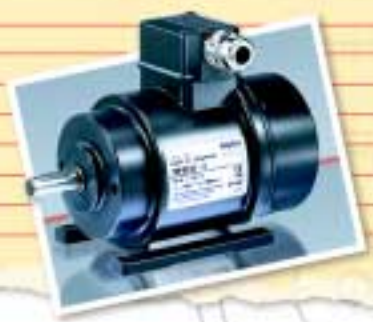
Voltage:	10 → 150 mV/rpm
Temp. coefficient:	±0.005 %/K
Ripple:	≤ 0.5 % pp
Time constant:	160 µs
Power:	12 W
Options:	Rear shaft
	Climate protection
	Twin Tacho **TDPZ 0,2** page 43



EURO flange® B10	
Shaft:	∅ 11 mm,
	Option ∅ 7; 14 mm
Max. speed:	10,000 → 4,000 rpm
Moment of inertia:	1.1 kgcm²
Weight:	approx. 2.5 kg
Protection:	IP 55

TDP 0,2 LT

Voltage:	10 → 150 mV/rpm
Tk:	±0.005 %/K
Ripple:	≤ 0.5 % pp
Time constant:	160 µs
Power:	12 W
Options:	Rear shaft
	Climate protection
	Twin Tacho **TDPZ 0,2** page 43

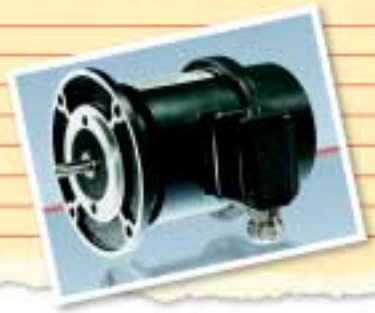


Foot mounting B3	
Shaft:	∅ 11 mm
Max. speed:	10,000 → 4,000 rpm
Moment of inertia:	1.1 kgcm²
Weight:	approx. 2.5 kg
Protection:	IP 55

HÜBNER Tachos with own bearings and their Key Data

TDP 0,2 US

Voltage:	50; 100 mV/rpm
Temp. coefficient:	±0.005 %/K
Ripple:	≤ 0.5 % pp
Time constant:	160 µs
Power:	12 W
Option:	Foot mounting



NEMA flange:	∅ 4.528”
Shaft:	∅ 0.315”
Max. speed:	10,000 → 6,000 rpm
Moment of inertia:	1.1 kgcm²
Weight:	approx. 2.5 kg
Protection:	IP 55

TDP 0,2 LS

Voltage:	60 mV/rpm
Temp. coefficient:	±0.005 %/K
Ripple:	≤ 0.5 % pp
Time constant:	160 µs
Power:	12 W
Cable connection	

EURO flange® B10	
Shaft:	∅ 11 mm
Max. speed:	10,000 rpm
Moment of inertia:	1.1 kgcm²
Weight:	approx. 2.4 kg
Protection:	IP 55

GMP 1,0

Voltage:	40 → 175 mV/rpm
Temp. coefficient:	±0.005 %/K
Ripple:	≤ 1 % pp
Time constant:	550 µs
Power:	30 W
Options:	Rear shaft
	Foot mounting B3
	Climate protection
	Twin Tacho page 43

Flange:	B5; B5n; B5s; B5k
Shaft:	∅ 12; 14 mm
Max. speed:	6,000 → 3,000 rpm
Moment of inertia:	4.5 kgcm²
Weight:	approx. 4.5 kg
Protection:	IP 55

TDP 13

Voltage:	20 → 200 mV/rpm
Temp. coefficient:	±0.005 %/K
Ripple:	≤ 0.5 % pp
Time constant:	400 µs
Power:	40 W
Options:	Rear shaft
	Foot mounting B3; B5kd; B5km
	Climate protection
	Twin Tacho page 43

Flange:	B5; B5s; B5k;B10; B10w
Shaft:	∅ 14; 20; 32 mm
Max. speed:	6,000 → 3,000 rpm
Moment of inertia:	15 kgcm²
Weight:	approx. 8.5 kg
Protection:	IP 55

HÜBNER Explosion proof Tachos and their Key Data

EEx GP 0,2

"EEx de IIC T6"

Voltage:	20 → 150 mV/rpm
Temp. coefficient:	±0.005 %/K
Ripple:	≤ 0.6 % pp
Time constant:	150 µs
Power:	12 W

EURO flange® B10	
Shaft:	∅ 11 mm
Max. speed:	8,000 → 2,800 rpm
Moment of inertia:	1.15 kgcm²
Weight:	approx. 3.8 kg
Protection:	IP 54

TG 74 d

"EEx de IIC T6"

Voltage:	20 → 150 mV/rpm
Temp. coefficient:	±0.005 %/K
Ripple:	≤ 0.6 % pp
Time constant:	150 µs
Power:	12 W
Option:	Rear shaft

EURO flange® B10	
Shaft:	∅ 14 mm
Max. speed:	8,000 → 2,800 rpm
Moment of inertia:	1.15 kgcm²
Weight:	approx. 3.8 kg
Protection:	IP 54

Special Tachogenerator with explosion proof housing

d3n GP 1,0

"Ex d3n G 5"

Voltage:	18 → 150 mV/rpm
Temp. coefficient:	-0.03 %/K
Max. speed:	4,000 → 2,600 rpm
Shaft:	∅ 14 mm
Housing:	∅ 140 mm

HÜBNER Special Tachogenerators and their Key Data

··· with own bearings

TDP 5,5

Voltage:	30 → 280 mV/rpm
Temp. coefficient:	±0.005 %/K
Max. speed:	4,000 → 1,800 rpm
Shaft:	∅ 16; 32 mm
Housing:	∅ 72 mm

TDP 15

Voltage:	100 → 400 mV/rpm
Temp. coefficient:	±0.005 %/K
Max. speed:	2,400 → 1,250 rpm
Shaft:	∅ 42; 55 mm; cone 1:20
Housing:	∅ 229 mm

TDP 60

Voltage:	200 → 4,000 mV/rpm
Temp. coefficient:	±0.005 %/K
Max. speed:	1,200 → 125 rpm
Shaft:	∅ 55; 90 mm; cone 1:20
Housing:	∅ 380 mm

··· with hollow-shaft

HTA 9

Voltage:	10 → 60 mV/rpm
Temp. coefficient:	±0.005 %/K
Max. speed:	9,000 → 5,000 rpm
Hollow-shaft:	∅ 12; 16 mm
Housing:	∅ 95 mm

HTA 10

Voltage:	20 → 60 mV/rpm
Temp. coefficient:	±0.005 %/K
Max. speed:	9,000 → 6,000 rpm
Hollow-shaft:	∅ 19; 22; 25 mm
Housing:	∅ 95 mm

HTA 11

Voltage:	20; 60 mV/rpm
Temp. coefficient:	±0.005 %/K
Max. speed:	6,000 rpm
Hollow-shaft:	∅ 28; 32; 35 mm
Housing:	∅ 110 mm

HTA 16

Voltage:	500; 1,000 mV/rpm
Temp. coefficient:	±0.005 %/K
Max. speed:	720; 360 rpm
Hollow-shaft:	∅ 35 mm
Housing:	∅ 170 mm

TDP 0,5

Voltage:	20; 40 mV/rpm
Temp. coefficient:	±0.005 %/K
Max. speed:	9,000; 5,000 rpm
Hollow-shaft:	∅ 16 mm
Housing:	∅ 95 mm

Hollow-shaft with own bearings

TDPH 10 / TDPH 35 / TDPH 50

Voltage:	0.1 → 0.8; 0.1 → 1; 0.1 → 1.4 V/rpm
Temp. coefficient:	±0.005 %/K
Max. speed:	500 → 62; 750 → 75; 1,200 → 90 rpm
Hollow-shaft:	∅ 45 → 55; 65 → 85; 95 → 130 mm; cone 1:20
Housing:	∅ 210; 240; 290 mm

AC Tachogenerators

T 501 / T 701

Voltage AC:	3 × 11; 23 mV/rpm
Voltage DC:	15; 30 mV/rpm
Hollow-shaft:	∅ 6 → 16 mm
Housing:	∅ 51; 70 mm

Trapezoidal Tachogenerators

HWT 502 / HWT 801

⎍	3 × 20 V_{pp}
Hollow-shaft:	∅ 8; 16 mm
Housing:	∅ 45; 80 mm

HÜBNER Twin Tachos and their Key Data

Series “Z”

TDPZ 0,09

Voltage:	2 × 10 → 40 mV/rpm
Temp. coefficient:	±0.005 %/K
Ripple:	≤ 0.55 % pp
Time constant:	10 µs
Power:	2 × 0,3 W

Flange:	∅ 85 mm
Shaft:	∅ 6 mm
Max. speed:	10,000 rpm
Moment of inertia:	0.3 kgcm²
Weight:	approx. 1.3 kg
Protection:	IP 56

TDPZ 0,2

Voltage:	2 × 20 → 100 mV/rpm
Temp. coefficient:	±0.005 %/K
Ripple:	≤ 0.5 % pp
Time constant:	40 µs
Power:	2 × 3 W
Options:	Rear shaft
	Foot mounting B3
	Climate protection

EURO flange® B10	
Shaft:	∅ 11 mm
Max. speed:	10,000 → 6,000 rpm
Moment of inertia:	1.2 kgcm²
Weight:	approx. 3 kg
Protection:	IP 55

GMPZ 1,0

Voltage:	2 × 40 → 175 mV/rpm
Temp. coefficient:	±0.005 %/K
Ripple:	≤ 1 % pp
Time constant:	270 µs
Power:	2 × 30 W
Options:	Rear shaft
	Foot mounting B3; B5kd; B5km
	Climate protection

Flange:	B5; B5n; B5s; B5k
Shaft:	∅ 12; 14 mm
Max. speed:	6,000 → 3,400 rpm
Moment of inertia:	8.5 kgcm²
Weight:	approx. 7 kg
Protection:	IP 55

TDPZ 13

Voltage:	2 × 20 → 200 mV/rpm
Temp. coefficient:	±0.005 %/K
Ripple:	≤ 0.5 % pp
Time constant:	200 µs
Power:	2 × 20 W
Options:	Rear shaft
	Foot mounting B3; B5kd
	Climate protection

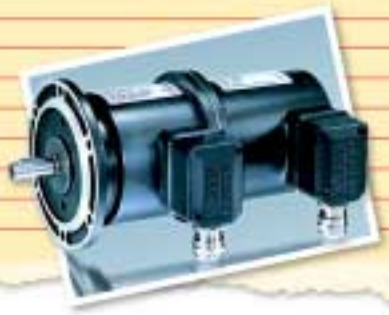
Flange:	B5; B5s; B5k; B10; B10w
Shaft:	∅ 14; 20; 32 mm
Max. speed:	6,000 → 3,000 rpm
Moment of inertia:	17 kgcm²
Weight:	approx. 10 kg
Protection:	IP 55

Analog + Digital-Tachos

TDP 0,2 / TDPZ 0,2 + OG 9

Analog-Tacho TDP 0,2/
Twin Tacho TDPZ 0,2
with Digital-Tacho OG 9

OG 9: 1 → 1,250 counts per turn
HTL, TTL, TTL (R)



EURO flange® B10, Option foot mounting B3
Common shaft
Shock resistance: 1,000 m/s² (6 ms)
Weight: approx. 3 kg
Protection: IP 55

TDP 0,2 + OG 60

Analog-Tacho TDP 0,2
with Digital-Tacho OG 60

OG 60: 200 → 10,000 counts per turn
TTL, TTL (R), HTL (C),

EURO flange® B10
Internal coupling
Shock resistance: 1,000 m/s² (6 ms)
Weight: approx. 3 kg
Protection: IP 55

FOG 9 + GT 7

Digital-Tacho FOG 9
with Analog-Tacho GT 7

FOG 9: 1 → 1,250 counts per turn
HTL, TTL, TTL (R)

EURO flange® B10
Common shaft
Shock resistance: 1,000 m/s² (6 ms)
Weight: approx. 1.1 kg
Protection: IP 55

OG 60 + GT 5

Digital-Tacho OG 60
with Analog-Tacho GT 5

OG 60: 200 → 10,000 counts per turn
TTL, TTL (R), HTL (C),

Servo flange
Common shaft
Shock resistance: 1,000 m/s² (6 ms)
Weight: approx. 450 g
Protection: IP 54

Analog-Tachos + Overspeed switches

TDP 0,09 + FSL

Analog-Tacho TDP 0,09
with mechanical
overspeed switch FS(L) 90

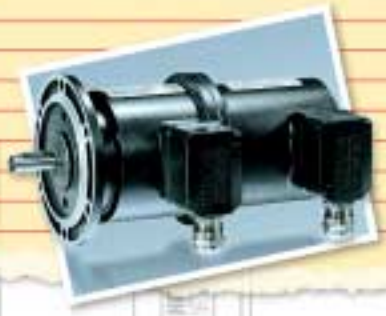
FS(L) 90: 700 → 4,900 rpm

Flange: ∅ 85 mm
Common shaft
Shock resistance: 1,000 m/s² (6 ms)
Weight: approx. 1.5 kg
Protection: IP 55

TDP 0,2 + FSL

Analog-Tacho TDP 0,2
with mechanical
overspeed switch FS(L) 90

FS(L) 90: 700 → 4,900 rpm



EURO flange® B10
Common shaft
Shock resistance: 1,000 m/s² (6 ms)
Weight: approx. 2.9 kg
Protection: IP 55

TDP 0,2 + ESL

Analog-Tacho TDP 0,2
with electronic
overspeed switch ES(L) 90

ES(L) 90: 650 → 6.000 rpm
ES(L) 93: 3 × 200 → 5.000 rpm

EURO flange® B10
Common shaft
Shock resistance: 1,000 m/s² (6 ms)
Weight: approx. 2.9 kg
Protection: IP 55

TDPZ + FSL/ESL

Twin-Tacho TDPZ 0,2
with mechanical
overspeed switch FS(L) 90
or with electronic
overspeed switch ES(L) 90 or ES(L) 93

ES(L) 90: 650 → 6.000 rpm
ES(L) 93: 3 × 200 → 5.000 rpm

EURO flange® B10
Common shaft
Shock resistance: 1,000 m/s² (6 ms)
Weight: approx. 3.4 kg
Protection: IP 55

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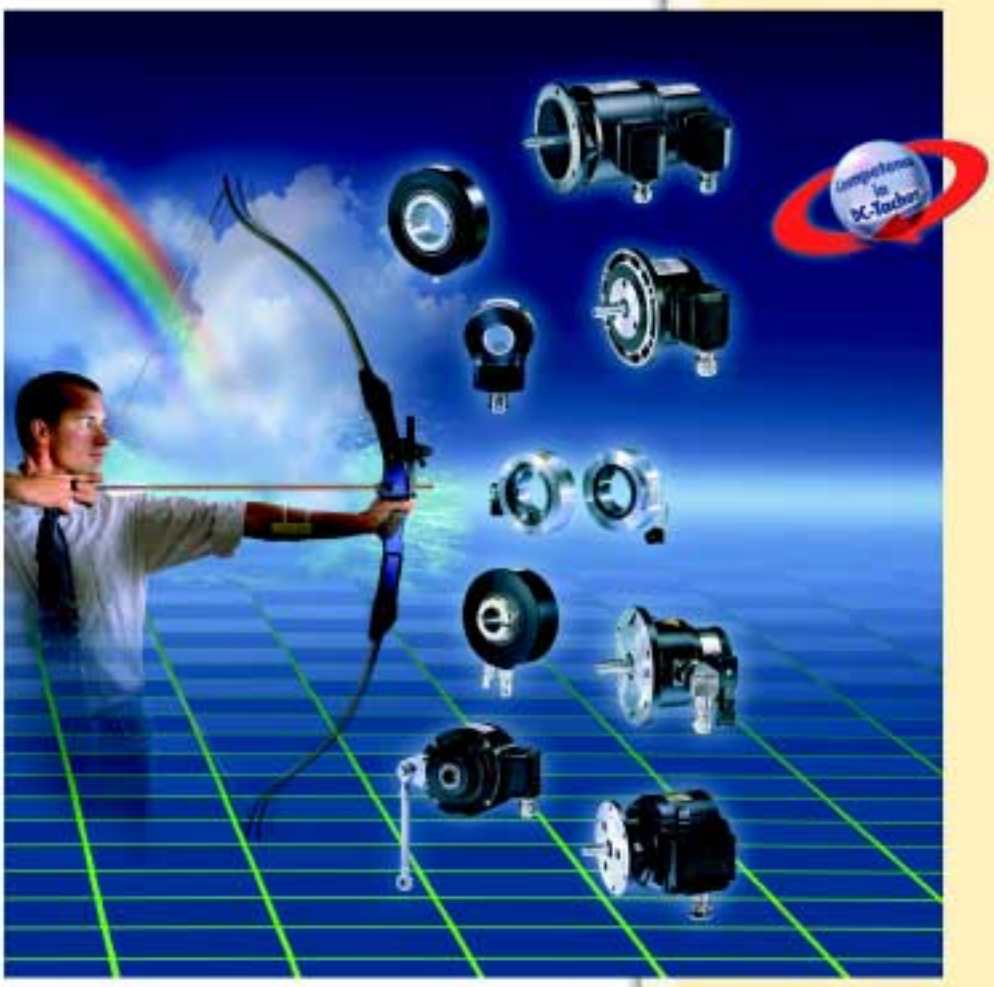
Digital-Tachos (incremental encoders) in **HeavyDuty®** technology: rugged electrical and mechanical construction.

LowHarmonics® Sinus-Tachos: Sinewave signals with significantly low harmonics – a new level of precision.

Overspeed switches: mechanically by centrifugal actuator or electronically with own or external voltage supply.

ExtendedSpeed® angular and linear acceleration sensors with no speed limit.

Combinations: Digital-Tachos, dc tachogenerators or over-speed switches in one single housing with continuous shaft.



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