Measurement and Sensor Systems

Camshaft Gears

FSG
FERNSTEUERGERÄTE

Camshaft Gears

with break-before-make contact sets having analog or digital remote indicator systems

Camshaft Gears are mainly used for **end-point monitoring on driving-mechanisms** in crane production, e.g. hoisting winches, swing and hoisting gear.

If the length or angle to be monitored shall additionally be output as a continuous electrical signal, a **mounting arrangement** of a **remote indicating device** of the **analog** or **digital** type is optional available.

They contain in a **robust protective casing**, degree of **protection IP 65** to **IP 68**, either a backlash compensated gear or a gear with reduced backlash for matching the input angle with the switching or transducer angle.

The downstream of the gear located camshaft is ready to receive cam plates, for the most part two of them, but at maximum it **can be provided with up to 10 cam plates**.

Each cam unit contains two semicircular disks, which can be adjusted against each other by means of a screwdriver via a worm drive, the switching point position encompassing a switching angle from about 10° up to 350° at maximum, and over 360° of the cam shaft.

Sets of break-before-make contacts are used, each comprising one normally-closed and one normally-open contact. Silver contact sets are normally used for controlling purposes in contactor and relay circuits; in control circuits for electronic semiconductor components only sets of gold contacts are used.

For positional back-indication via coupling or gear, one or two angular position transmitters can be operated on the camshaft, optionally with **analog** or **digital** output signal.

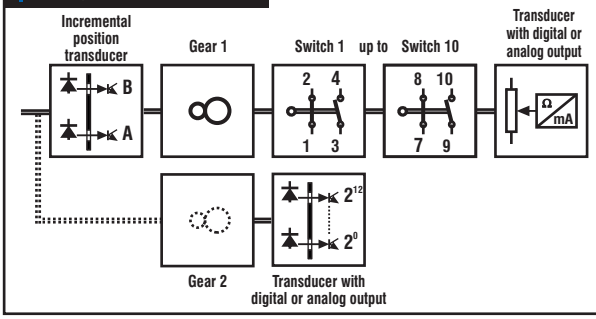
Analog measuring signals of **potentiometric** or **inductive angular position transmitters** are output as **current or voltage variation**.

Digital measuring signals of **optoelectronic encoders** are output as measuring steps either **incrementally** or **absolutely coded** (Gray code), on a CAN-bus or SSI-Interface.

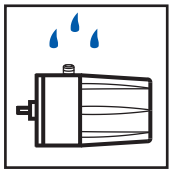
For more detailed information please refer to our data sheet „Angular Position Transmitters“.

Application range

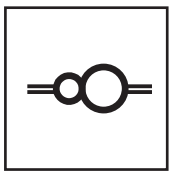
Design varieties



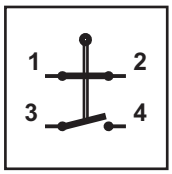
Specifications



Casing data	
Casing material	cast aluminium, grey varnished RAL 7032
Degree of protection	IP 65, IP 68 on request
Electrical connection	Cable gland with internal terminal block or plug-type connection on request
Driving shaft	stainless steel
Shaft bearing	two ball bearings
Gearwheels	brass, ball bearings
Temperature range	–30°C up to +70°C



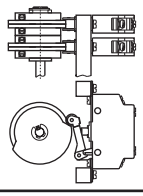
Gear data	
Gear 1 (basic gear)	reduced backlash 1:1 to 1296:1
Ratio	backlash compensated 1:1 to 216:1 (spring gearwheels)
	backlash compensated speed increasing ratio 1:1 to 1:10
Gear 2 (supplementary gear)	on request



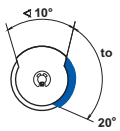
Switch data		
Cam switch	1 normally-closed and 1 normally-open contact, each with break-before-make contact (max. 10 switches per unit)	
Switching hysteresis	approx. 5°	
Switching angle	max. 350°	
Contact material	**hard silver**	**gold**
Switching voltage	max. 380 VAC, 34 VDC max.	24 VDC, min. 6 V
Switching current	max. 10 A, 3 A	max. 250 mA, min. 1 mA

Cam plates

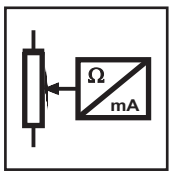
Switching angle and switching point position adjustable via a worm drive by means of a screwdriver



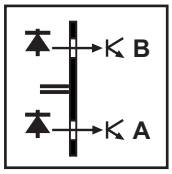
Angular ranges of semi-circular disks



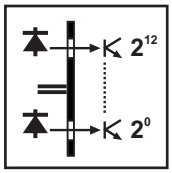
10 to 20° 60 to 120°
25 to 50° 90 to 180°
45 to 90° 180 to 350°



Transmitter data			
Potentiometric transmitter		**Potentiometric transmitter with signal converter for current or voltage signals**	
Resistor output	1, 2 or 5 kΩ	Current signals	0/4 - 20 mA, $R_L \leq 600\Omega$
Linearity	± 0,2%	Voltage signals	0/2 - 10 V, $R_L \geq 500\Omega$
		Supply	18 - 33 VDC



Incremental position transducer*	
Pulses per revolution	160° / 360°
Pulse frequency	max. 5 kHz
Pulse output	A- and B-track
pnp or npn transistor output	max. 10 mA short circuit proof

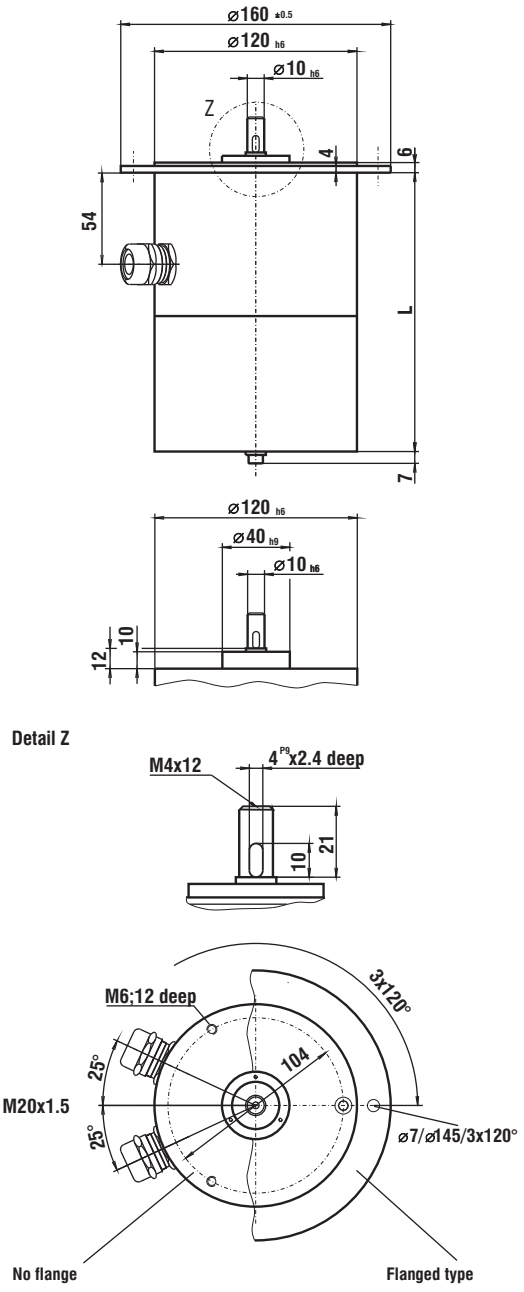


Absolute coded transmitter	
Scan code	Gray code
Resolution	14 bit
Signal output	Gray code, parallel pnp-transistor output, CAN- or SSI-interface or digital to analog converter, available also with a 4 - 20 mA signal with 12 bit resolution. For more detailed information please refer to data sheet “Angular Position Transmitters“.

* Incremental position transducers are for the most part directly coupled to the drive shaft, because these transmitters are used on hoisting winches for outputting the measuring signal, which is proportional to the rope length.

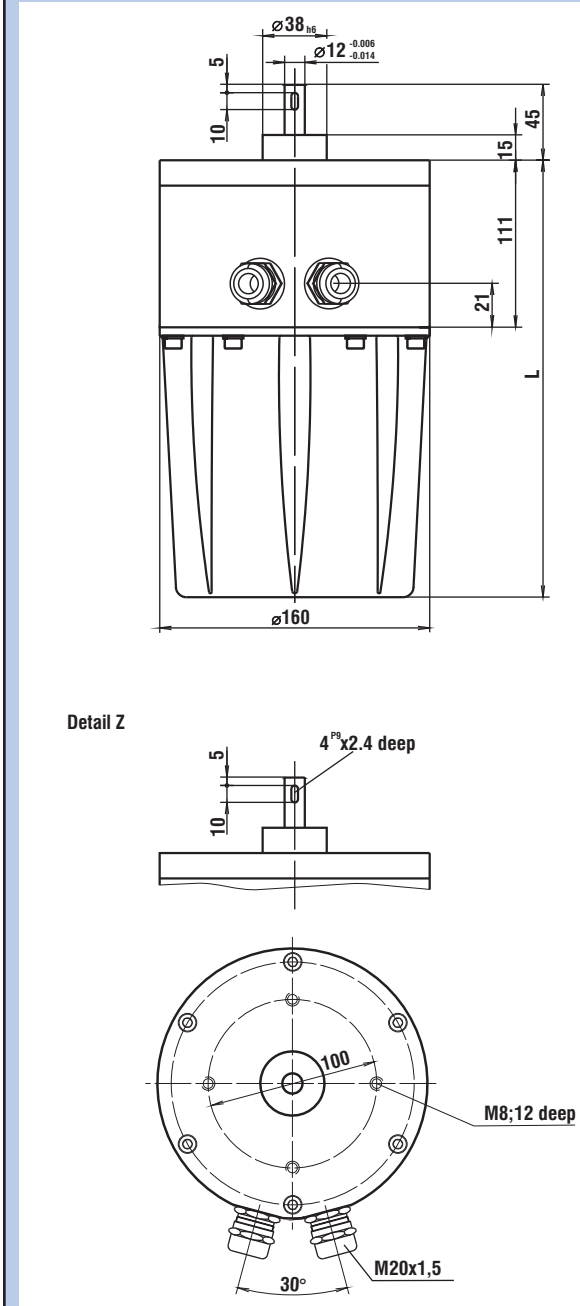
Models

GS 120



Casing length depends on equipment configuration
(dimension L) GS 120 min 150 mm…280 mm

GS 160



Casing length depends on equipment configuration
GS 160 min 170 mm…290 mm

Berlin

Fernsteuergeräte
Kurt Oelsch GmbH
Jahnstraße 68 + 70
D-12347 Berlin
Phone +49 (0 30) 62 91 - 1
Fax +49 (0 30) 62 91 - 277
info@fernsteuergeraete.de
www.fernsteuergeraete.de

Kablow

FSG Fernsteuergeräte
Meß- und Regeltechnik GmbH
OT Kablow
Mühlenweg 2 - 3
D-15712 Königs Wusterhausen
Phone +49 (0 33 75) 269 - 0
Fax +49 (0 33 75) 269 - 277

Heppenheim

Fernsteuergeräte
Kurt Oelsch GmbH & Co.KG
Weiherhausstraße 10
D-64646 Heppenheim
Phone +49 (0 62 52) 99 50 - 0
Fax +49 (0 62 52) 72 05 - 3

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