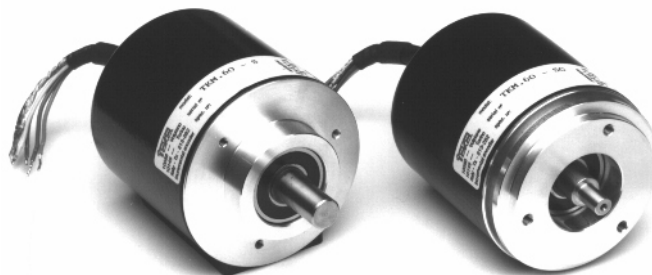


TKM60 series



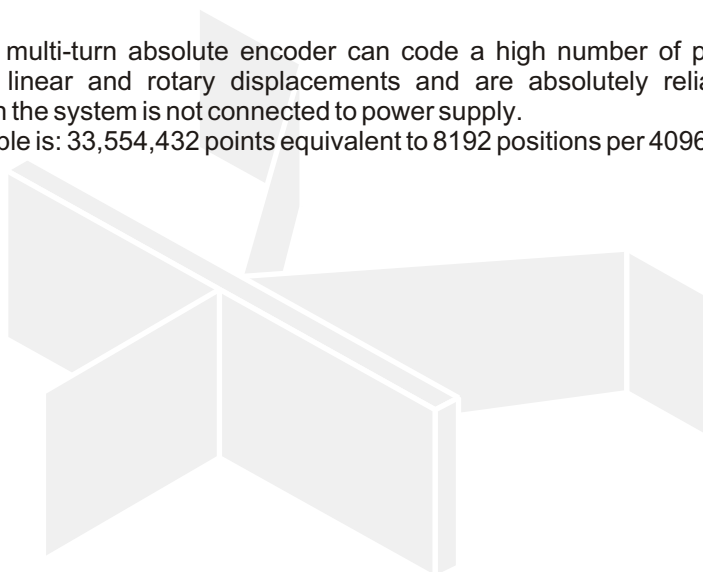
Main features

The multi-turn absolute encoder is a very complex device to which one or more reduction gears are connected in cascade to the main shaft. Each reduction gear is composed of different sprocket wheels that allow to reach a reduction ratio 10:1 or 16:1 and of a disc that codes the turns made by the input shaft of the gear itself. Therefore, the main shaft resolution disc of the encoder is multiplied by the reduction ratio and by the number of gears.

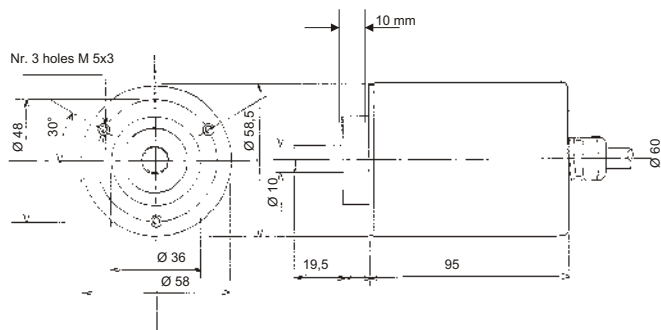
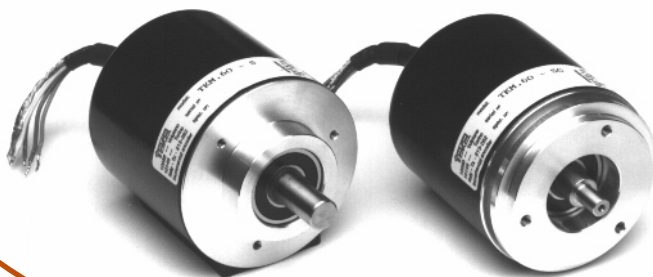
In theory, it is possible to connect an endless number of reduction gears, but, at the moment, a practical limit of three has been fixed, which allow the multiplication of the basic resolution by a 1,000 (10x10x10) or by 4,096 (16x16x16).

Thanks to these features, the multi-turn absolute encoder can code a high number of positions. These positions can represent both linear and rotary displacements and are absolutely reliable even after mechanical displacement, when the system is not connected to power supply.

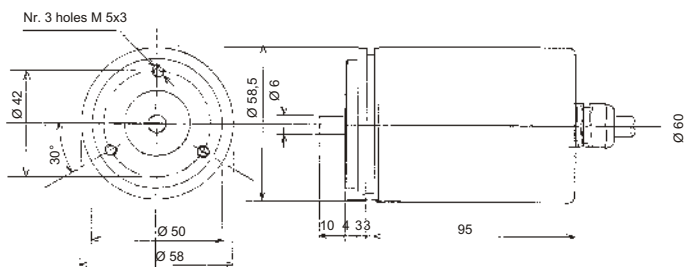
The maximum resolution available is: 33,554,432 points equivalent to 8192 positions per 4096 turns.



TKM60 series



S = Servo



SG = Servo Brackets

TECHNICAL DATA SHEET: TKM60 series

TECHNICAL CHARACTERISTICS

Code	G Gray B Binary
Standard no. of pulses per resolution	2-4-8-16-32-64-128-256-512-1024-2048-4096-8192
Number of turn	2-4-8-16-32-64-128-256-512-1024-2048-4096

MECHANICAL CHARACTERISTICS

Assembly	SG Servo Brackets S Servo standard T Servo brackets + centering dia. 36 mm
Dimensions	See drawings
Mass	0,65 kg
Slewing speed	10,000 rpm for short period; 6,000 rpm for normal operation; 2,000 rpm with shaft seal
Shaft diameter	10 mm - 6 mm
Shaft seal	Available
Starting torque at 25°C	
Ball bearing working life	10 ⁹ revolutions min.
Shaft loading	Axial 200 N; radial 200 N

MATERIALS

Mainframe	"Al" thermally stabilised
Housing	"Al" anodised
Shaft	Stainless steel
Light source	GaAsAl infrared light emitting diode MTFB 10 ⁵ hrs min.

ENVIRONMENTAL CHARACTERISTICS

Operating temperature	-10 ÷ +70 °C
Storage temperature	-30 ÷ +80 °C
Humidity	Up to 98 % RH without condensation
Protection	K4 IP 64 for DIN 40050; K5 IP 65 for DIN 40050; K6 IP 66 for DIN 40050
Vibrations	10 g (10 ÷ 2000 Hz)
Shock	20 g for 11 ms

ELECTRICAL CHARACTERISTICS

Voltage supply	5 V ±5 % 11/30 V
Protection	Against polarity reverse (not 5 Vcc)
Frequency range (T=-10°C ÷ +70°C)	0 ÷ 20 KHz (L.S.B. without error)
Output	00 TTL standard (positive logic) only 5 V 20 PNP 100 mA standard Open collector (positive logic) 21 PNP 100 mA standard pull-down resistor included (positive logic) 22 NPN 100 mA standard Open collector (negative logic) 23 NPN 100 mA standard pull-down resistor included (negative logic) 30 PUSH-PULL 100 mA (positive logic) Snnx SSI interface (*)

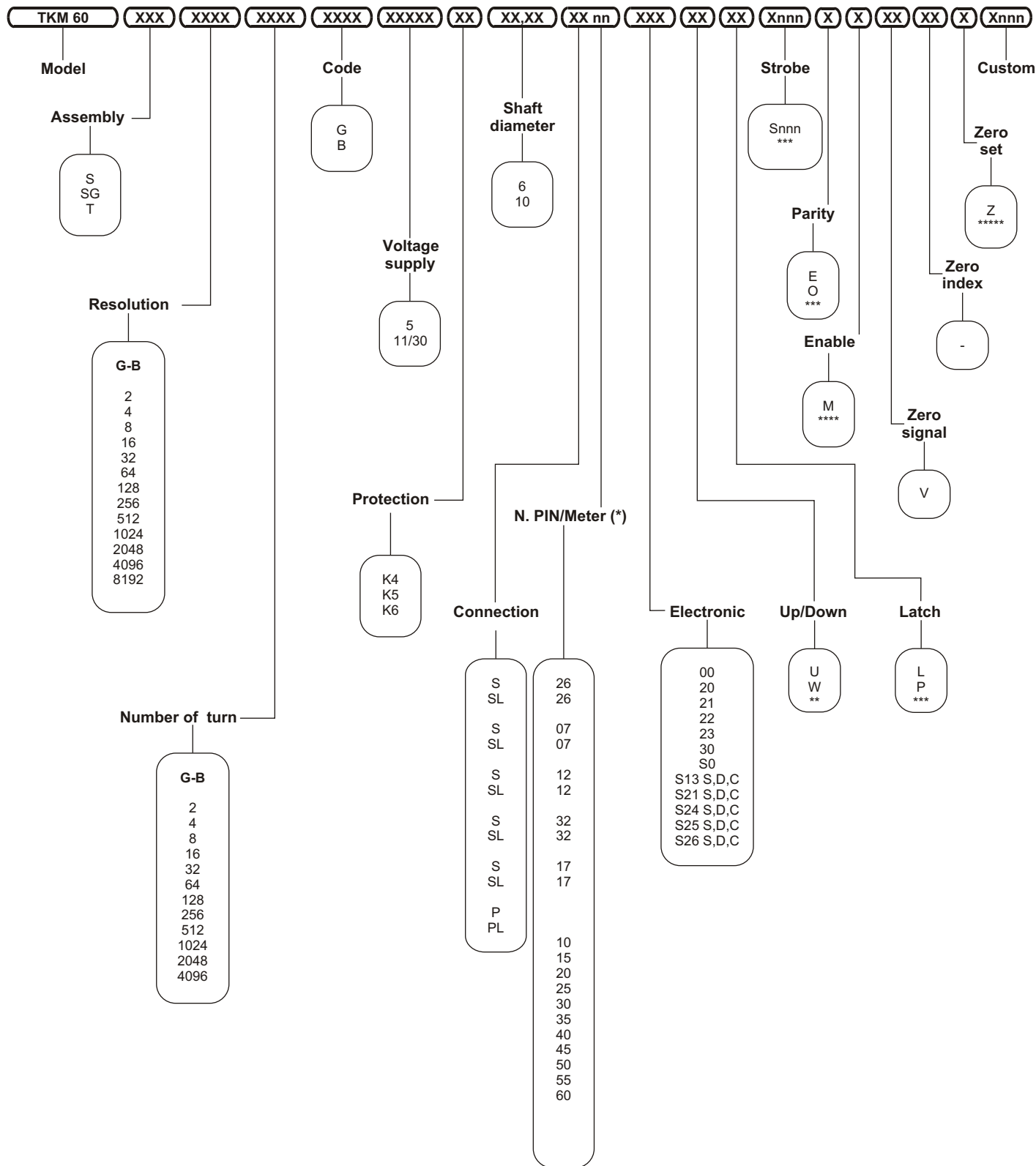
CONNECTION CONFIGURATIONS

P	axial cable gland with 1÷6 m
PL	radial cable gland with 1÷6 m
S	on 07, 26, 32 pins axial MIL connector or 12, 17 pins connector
SL	on 07, 26, 32 pins radial MIL connector or 12, 17 pins connector

OPTIONAL FUNCTIONS

U	Up/Down NPN	S	Strobe	R	Reverse (inverted code)
W	Up/Down PNP	M	Enable NPN	Z	Zero set NPN
L	Latch NPN	E	"Even" or "Even parity"	V	Zero Signal
P	Latch PNP	O	"Odd" or "Odd parity"		

(*) nn = number of bit that do compose the protocol (13, 21, 24, 25, 26)
x = bit alignment on the right (D), on the left (S), at center (C)



(*) 10 = 1,0 m ... 60 = 6,0 m

(**) included in series price

(***) unique option which includes always the Latch, Strobe and Parity signal (included always when ordering B binary code); indicate only Snnn, where the 1st and 2nd figure = pulse length in μs the 3rd = multiplier (nr of "0" to be added).
Example: 201 = 20 x 10 = 200 μs ; 104 = 10 x 10.000 = 100.000 μs

(****) is always included with electronics 00, 20 and 22

(*****) optional