



Absolute Electro-Optical Encoders

Model CM 50

MULTI-TURN □ Parallel or Synchronous Serial Interface SS/

CM 10117 AE

04 / 93

- Compact and robust for mechanical engineering applications
- Gray output code
- Total capacity 18 Bit = 262.144 positions
- Resolution 1024 positions / 360° $\times$ max.
- Measuring range 256 turns max.
- Mechanically adjustable zero point
- Protected to IP 65

Construction

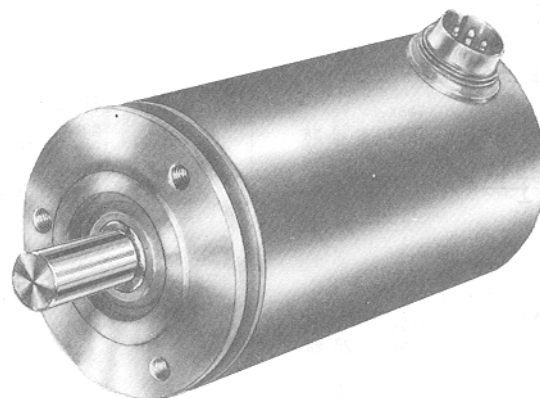
Flange and case in anodised aluminium - Shaft in stainless steel 9 mm ball-bearings with Nilos ring seal - code disc in deformation resistant plastic - GaAlAs diodes - photo-transistor array with comparator and trigger circuits - gate array - SMD technology.

Technical Data

- Resolution: 2 to 1024 positions / 360°
- Measuring range: 2 to 256 turns
- Total number of positions: $2^{10} \times 2^8 = 2^{18}$
- Measurement position deviation: 10' 33"
- Output frequency*: 30 kHz max.
- Disc coding: Gray code
- Output code, parallel: Gray (max. 18 data Bit)
- Output code, serial: Gray (max. 18 data Bit)
- Code sense: CW or CCW (signal input E2)
- Logic polarity*: Positive
- Enable circuit*: Active or inactive, (for bus operation) (signal input E1)

* Only for parallel interface

- Sensor system: GaAlAs diode, photo-transistor array
- Parallel output: A = Open collector Darlington
B = Open collector, TTL compatible
C = Open emitter Darlington
- Serial output SS/: Differential data output to RS 422,
- Clock input: Differential (opto-coupler) for data driver to RS 422
- Supply voltage range: +11 V to + 26 VDC
- Supply current
Parallel: 90 mA typ. / 120 mA max.
Serial SS/: 130 mA typ. / 160 mA max.
- Operating speed: 3000 rpm max. (continuous)
4000 rpm max. (short period)



- Angular acceleration: 10^5 rad/s^2 max.
- Inertial mass of rotor: 50 gcm²
- Operating torque: $\leq 5 \text{ Ncm}$
- Wind-up torque: $\leq 1 \text{ Ncm}$
- Permissible axial and radial shaft load: 200 N max.
- Bearing life expectancy: 10^9 revolutions

- Operating temperature range: -20°C to $+60^\circ\text{C}$
- Storage temperature range: -25°C to $+70^\circ\text{C}$
- Permissible rel. humidity: 85% without condensation
- Resistance to shock: 200 m/s²; 11 ms (DIN IEC 68)
- Resistance to vibration: 5 Hz ... 1000 Hz ; 100 m/s² (DIN IEC 68)
- Protection class (DIN 40050): IP 65 (Nilos ring)
- Mass: 0.4 kg

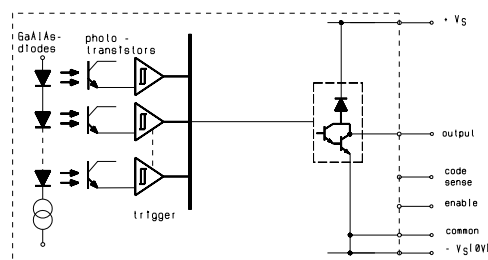
Electrical connections (standard version):

- Parallel: Lead with connector D B25 (IP 30)
- Serial: Round connector, 7-way (IP 65) on case

Mating connectors included in supplied items. Other types of connections on request.

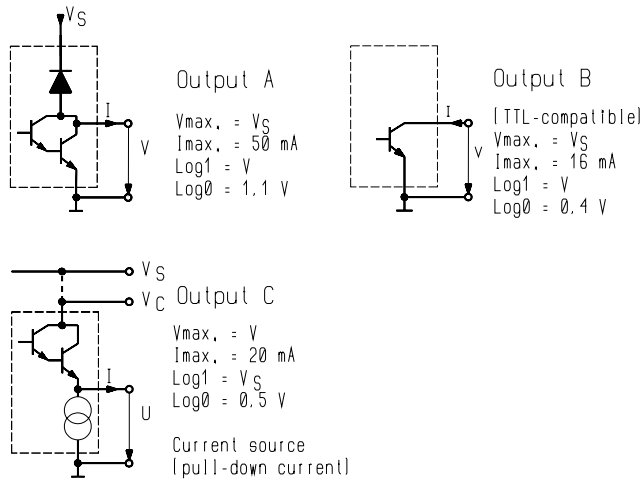
The parallel interface

Basic block diagram (Output A)

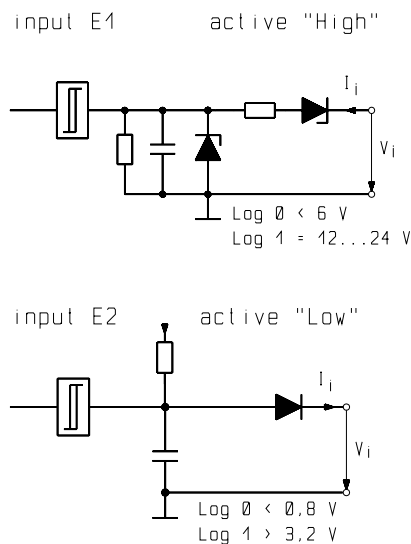


The parallel interface

Output circuits

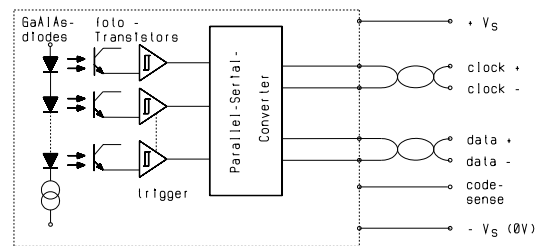


Signal inputs



The synchronous serial interface SS/- 18 Bit

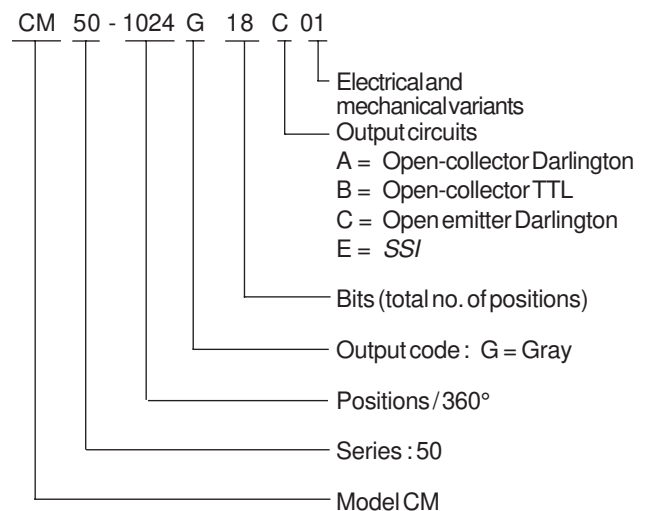
Block diagram SS/



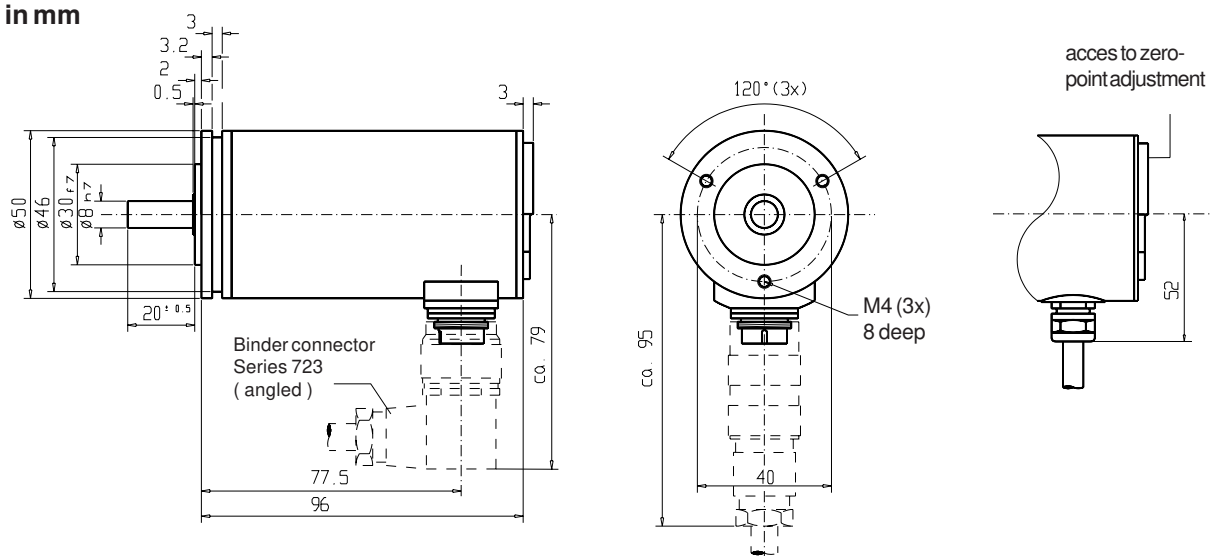
The parallel, absolute angle information derived by the encoder is converted into serial information by a parallel-serial converter and then transmitted to a receiving electronic circuit in synchronism with a clock. High data transmission rates of up to 1.5 MHz are possible depending on the length of the cable.

The SPC Converter Card is available for the conversion of the serial data into binary parallel data (Data Sheet 10109).

Order code format



Dimensions in mm



Serial interface
 7-way connector Bi 723 / IP 65

Parallel interface
 Lead with DB 25 / IP 30