

SERIES CMAX2

Magnetic absolute length and angle measurement
for linear and rotary applications



- Magnetic absolute measurement with up to 20-bit resolution
- For linear and rotary applications
- Space-saving installation
- Non-contact, wear-free measurement principle
- Communication via BiSS-C or SSI
- Additional incremental output signals (ABZ quadrature signals / 5V TTL)

CMAX2 - Absolute linear and rotary measuring systems

General:

The CMAX2 is a magnetic absolute measuring system designed for linear measuring lengths up to 192 mm or for rotary applications with a diameter up to 61 mm. The sensor system with integrated evaluation electronics is installed in a compact plastic housing. The data is output at the connector in BiSS-C interface format.

The sensor system processes travel speeds of up to 19 m/s in linear applications using a coded magnetic tape. Speeds of up to 24,000 rpm (depending on resolution and master period count (MPC)) can be processed in the rotary range using a coded magnetic ring.

Linear measurements with magnetic tape:

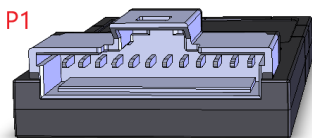
For linear measurement cases, the two-track absolute coded magnetic tape is stuck to a flat surface using the supplied adhesive tape. The CMAX2 should be mounted at a distance of ideally 0.4 mm (1.28 mm pole pitch) respectively 0.5 mm (1.5 mm pole pitch) to the magnetic tape. The magnetic tape has a width of 10 mm.

Rotary measurements with a magnetic ring:

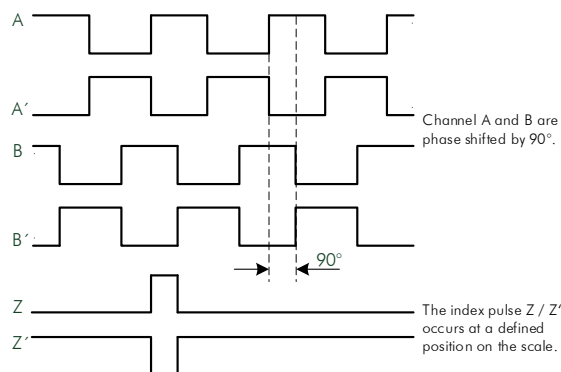
For radial or axial measuring configurations, a magnetic tape with a width of 10 mm is stuck to a steel ring. This, now 'magnetic', ring contains up to 128 individual poles (i.e. 64 pole pairs). Mounting on an axle occurs either by thermal fitting or by Adhesion. Use of the adhesive 'Loctite AA 326', pretreated with the activator 'Loctite 7649', is recommended. The measuring system should be mounted at a distance of ideally 0.4 mm (1.28 mm pole pitch) or 0.5 mm (1.5 mm pole pitch). to the magnetic ring.

Pin assignment 12 Pin WireToBoard:

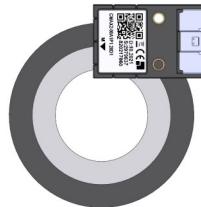
Pin	Function
1	Z'
2	Z
3	B'
4	Data-
5	Data+
6	GND
7	+5 V _{DC}
8	Clock-
9	Clock+
10	B
11	A'
12	A



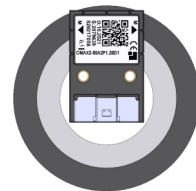
Output timing diagram:



Alignments:

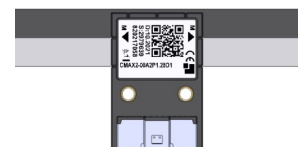


Alignment A1



Alignment A2

Master track ≙ ≙ Nonius track



CMAX2 - Absolute linear and rotary measuring systems

Technical data:

Mechanical Data	
Measurement principle	Absolute
Measurement method	Linear, rotary
Repeatability	±1 increment*
System accuracy at 20 °C	±20 µm*
Encoder distance to the magnetic tape	P1.28: 0.4 mm P1.50: 0.5 mm
Housing material	Hotmelt
Housing dimensions	L x W x H = 24.2 x 16 x 6.6 mm ³
Required magnetic tape	Vernier, 2-track
Maximum measuring length	P1.28: 163.84 mm P1.50: 192 mm
Connection type	12 pin socket, Molex
Encoder cable (optional)	1 m standard length, shielded, twisted pair, control cable (others on request, max. 3 m)
Encoder weight	Approx. 2.7 g without cable
Electrical Data	
Supply voltage	+5 V _{DC} ±5%
Residual ripple	< 10%
Current consumption	Approx. 65 mA @ 5 V _{DC}
Interfaces	BiSS-C, SSI, ABZ
Output levels	Absolute: RS485/RS422 Incremental: Push-Pull
Resolution (abs.)	Up to 18 Bit @ MPC = 16 Up to 19 Bit @ MPC = 32 Up to 20 Bit @ MPC = 64
Resolution (incr.)	4 to 262144 increments (in steps of four)
Max. operating speed	Up to 19 m/s (depending on pole pitch and configuration)
Environmental Conditions	
Operating temperature	-20 °C ... +60 °C
Storage temperature	-40 °C ... +80 °C
Relative humidity	max. 95%, (non-condensing)*
Protection class	IP60 (connector plugged)
EMC interference emission/-immunity	According to EN 61000

Type designation:

When ordering, please use the following ordering code:

CMAX2 - $\overline{A} \overline{A} \overline{B} \overline{B} \overline{C} \overline{C} \overline{C} \overline{C} \overline{D} \overline{D}$

A Version

00 = Default version

B Alignments

A1 = 0°

A2 = 90°

C Pole width

P1.28 = 1.28 mm

P1.50 = 1.50 mm

D Connector

D1 = 12 Pin, WireToBoard

Order example:

CMAX2- 00A1P1.50D1
AABBCC.CCDD

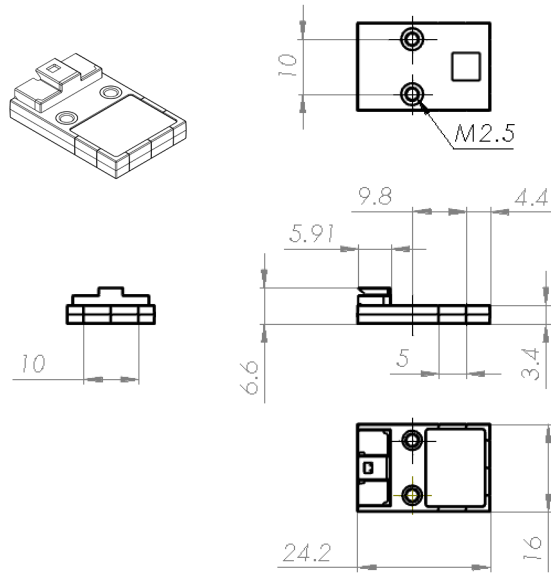
Your order:

CMAX2 - $\overline{A} \overline{A} \overline{B} \overline{B} \overline{C} \overline{C} \overline{C} \overline{C} \overline{D} \overline{D}$

*preliminary

CMAX2 - Absolute linear and rotary measuring systems

Dimensions: Details in mm



Application examples:

CMAX2 for distance measurement in connection with a linear scale.



CMAX2 for angle measurement in connection with an axial rotary scale.



CMAX2 for angle measurement in connection with a radial rotary scale.



Accessories:

Order key	Description
PROGRAMMING UNIT CMAX2	Programming unit incl. cable (KABEL BG CMAX2-DSUB-PROG, USB cable)
AB30-01280-10-2-R-EPS20 M:64-N:63 AB30-01500-10-2-R-EPS20 M:64-N:63	Magnetic tape, examples: Pole pitch: 1.28 mm, width: 10 mm, length: 163.84 mm Pole pitch: 1.5 mm, width: 10 mm, length: 192 mm
MRR/MRA-BB-CCC-DDD-EE-FFFF	Magnetic ring (for standard versions see operation manual, others on request, please contact sales)
KABEL BG CMAX2-00-01.0	Cable 1 m, absolute + incremental (twisted pair, single-sided open cable ends, 6 x 2 x 0.08 mm ² , PVC-sheath)

