The DS-130 is a member of the DS series of Electric Encoders™ a product line based on Netzer Precision Motion Sensor proprietary technology. EE products are characterized by features that enable unparalleled performance:

- Low profile (10 mm)
- Hollow, floating shaft
- No bearings or other contact elements
- High resolution and precision
- High tolerance to temperature extremes , shock, moisture, EMI, RFI and Magnetic fields
- Very low weight
- Holistic signal generation
- Digital interfaces for absolute position

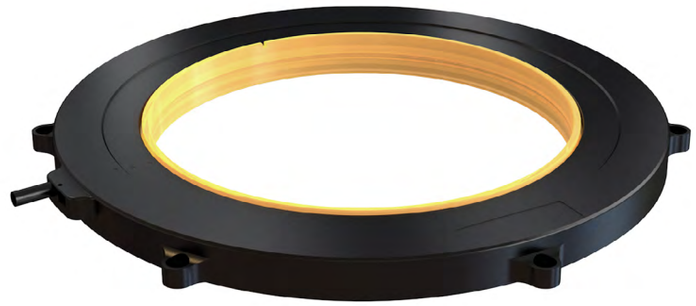
The holistic structure of the Electric Encoder™ makes it unique: Its output reading is the averaged outcome of the entire area of the rotor. This feature allows the EE a tolerant mechanical mounting and to deliver outstanding precision.

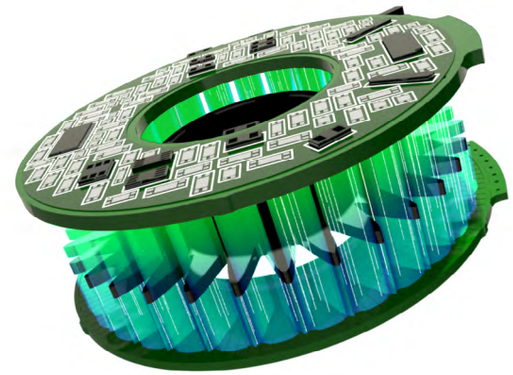
Due to the absence of components such as ball bearings, flexible couplers, glass discs, light sources and detectors along with very low power consumption enables the EE to deliver virtually failure-free performance in nearly all types of conditions.

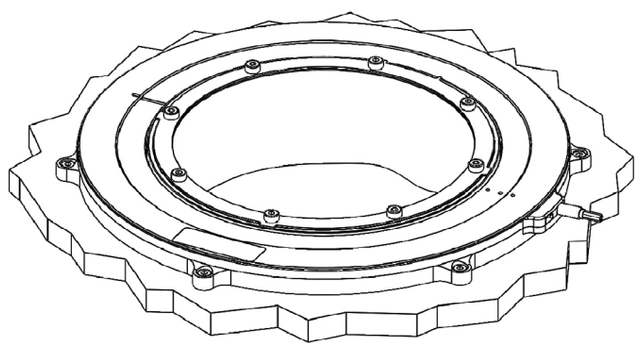
The internally shielded, DC- operated EE includes an electric field generator, a field receiver, sinusoidal-shaped dielectric rotor, and processing electronics.

The EE output is a digital serial synchronous with absolute position single turn.

This combination of high precision, low profile and, low weight has made Netzer Precision encoders highly reliable and particularly well suited to a wide variety of industrial automation and harsh environment applications.







General

Angular resolution[1]	19 bits ; 524,288 CPR
Maximum tested static error [2]	≤ 0.010°
Maximum operational speed	750 rpm
Measurement range	Unlimited rotation
Power On - Max. operational speed	3.3 RPM, <=20°/sec
Build In Test BIT	Optional

Mechanical

Allowable mounting eccentricity	±0.1 mm
Allowable rotor axial motion	±0.1 mm
Rotor inertia	12.378 gr · mm^2
Total weight	65 gr
Outer Ø /Inner Ø/ Height	130 / 90 / 10 mm
Material (stator, rotor)	Ultem™ polymer

Electrical

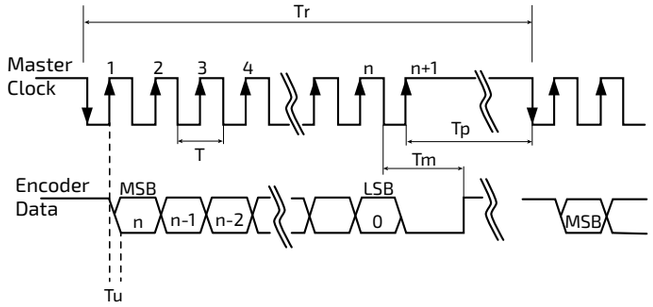
Supply voltage	5V ± 5%
Interconnection	Shielded cable
Cable length	1,500 mm MAX

Environmental

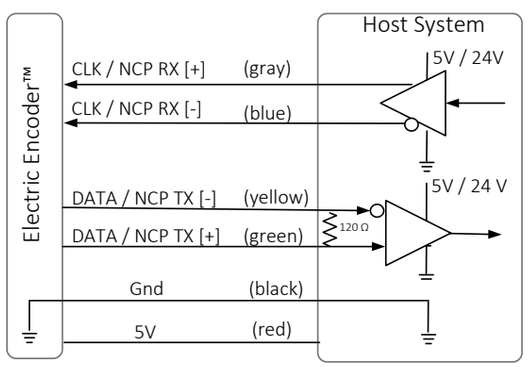
EMC	IEC 6100-6-2, IEC 6100-6-4
Operating temperature	-40°C to +85°C
Relative humidity	98% Non condensing
Shock endurance	100 g for 11 ms
Vibration endurance	20 g 10 – 2000 Hz
Protection	IP 40

Digital SSi Interface

Synchronous Serial Interface **(SSI)** is a point to point serial interface standard between a master (e.g. controller) and a slave (e.g. sensor) for digital data transmission.



	Description	Recommendations
n	Total number of data bits	12 - 22
T	Clock period	
f= 1/T	Clock frequency	0.5 - 2.0 MHz
Tu	Bit update time	200 nsec
Tp	Pause time	26 - ∞ µsec
Tm	Monoflop time	>25 µsec
Tr	Time between 2 adjacent requests	Tr > n*T+26 µsec
fr=1/Tr	Data request frequency	



SSi / BiSS output signal parameters

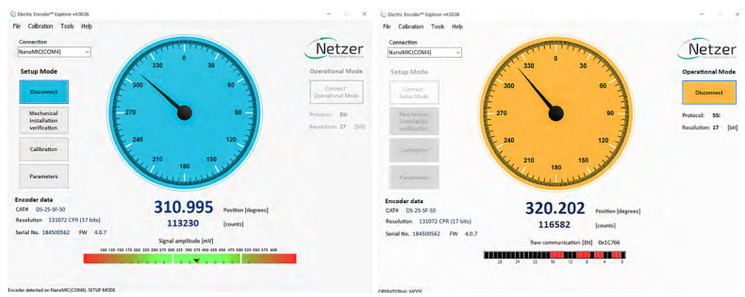
Output code	Binary
Serial output	Differential RS-422
Clock	Differential RS-422
Clock Frequency	0.5 ÷ 2.0 MHz
Position update rate	30 KHz

SSi / BiSS interface wires color code

Clock +	Grey	Clock
Clock -	Blue	
Data -	Yellow	Data
Data +	Green	
GND	Black	Ground
+5V	Red	Power supply

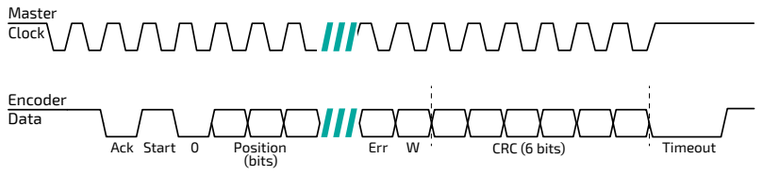
Software tools: (SSi / BiSS - C)

Advanced calibration and monitoring options are available by using the factory supplied Electric Encoder Explorer software, This facilitates proper mechanical mounting, offsets calibration and advanced signal monitoring.



Digital BiSS-C Interface

BiSS – C Interface is unidirectional serial synchronous protocol for digital data transmission where the Encoder acts as "slave" transmits data according to "Master" clock. The BiSS protocol is designed in B mode and C mode (continuous mode) .The BiSS-C interface as the SSi is based on RS-422 standards.



Bit #		Description	Default	Length
29	Ack	Period during which the encoder calculates the absolute position, one clock cycle	0	1/clock
28	Start	Encoder signal for "start" data transmit	1	1 bit
27	"0"	"start" bit follower	0	1 bit
8...26	AP	Absolute Position encoder data		
7	Error	Error (BIT optional)	1	1 bit
6	Warn.	Warning (non active)	1	1 bit
0...5	CRC	The CRC polynomial for position, error and warning data is: $x^6 + x^1 + x^0$. It is transmitted MSB first and inverted. The start bit and "0" bit are omitted from the CRC calculation.		6 bits
	Timeout	Elapse between the sequential "start"request cycle's.		25 µs

Ordering Code

DS - 130 - 64 - 3 S H [ ] - S 0 - n n n

DS Product line

Outer Diameter

Fine ECR

3 Channels

Output	
S	SSi
I	BiSS

Resolution		
Code	Bit	CPR
H	19	524,288

BIT (Build In Test): optional	
[ ]	None
B	BIT

nnn - Custom

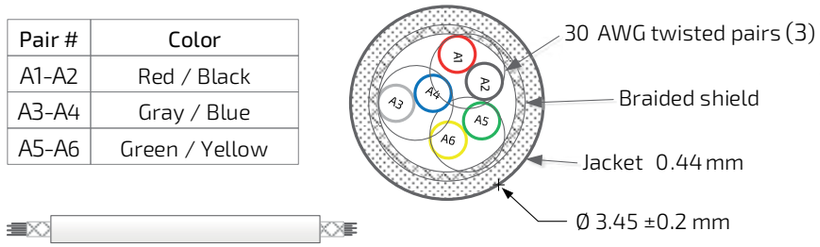
0	Flying leads (default)
C	Connector (optional)

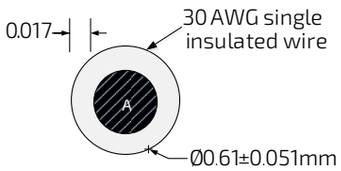
Interconnection	
S	Shielded cable 250 mm
R	Strain relief & shielded cable

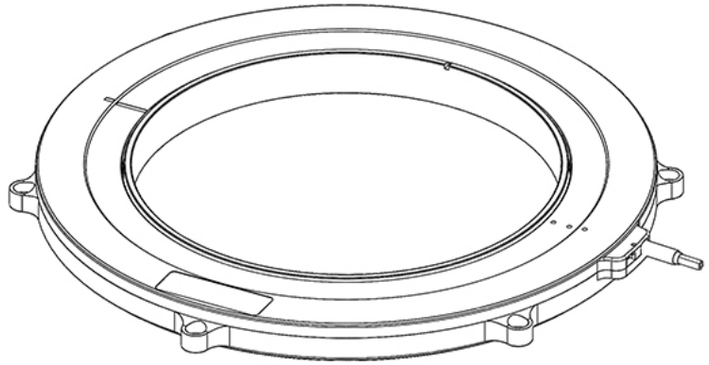
Cable Information

Netzer Cat No.: CB 00014
Cable: 30 AWG twisted pair (3):
2 (30 AWG 25/44 tinned copper, Insulation: PFE Ø 0.15 to Ø 0.6 ± 0.05 OD)
Temperature rating: -60 to +150 Deg C
Braided shield: Thinned copper braided 95% min. coverage
Jacket: 0.44 silicon rubber (NFA 11-A1) Ø3.45 ±0.2 OD

Pair #	Color
A1-A2	Red / Black
A3-A4	Gray / Blue
A5-A6	Green / Yellow







Related documents

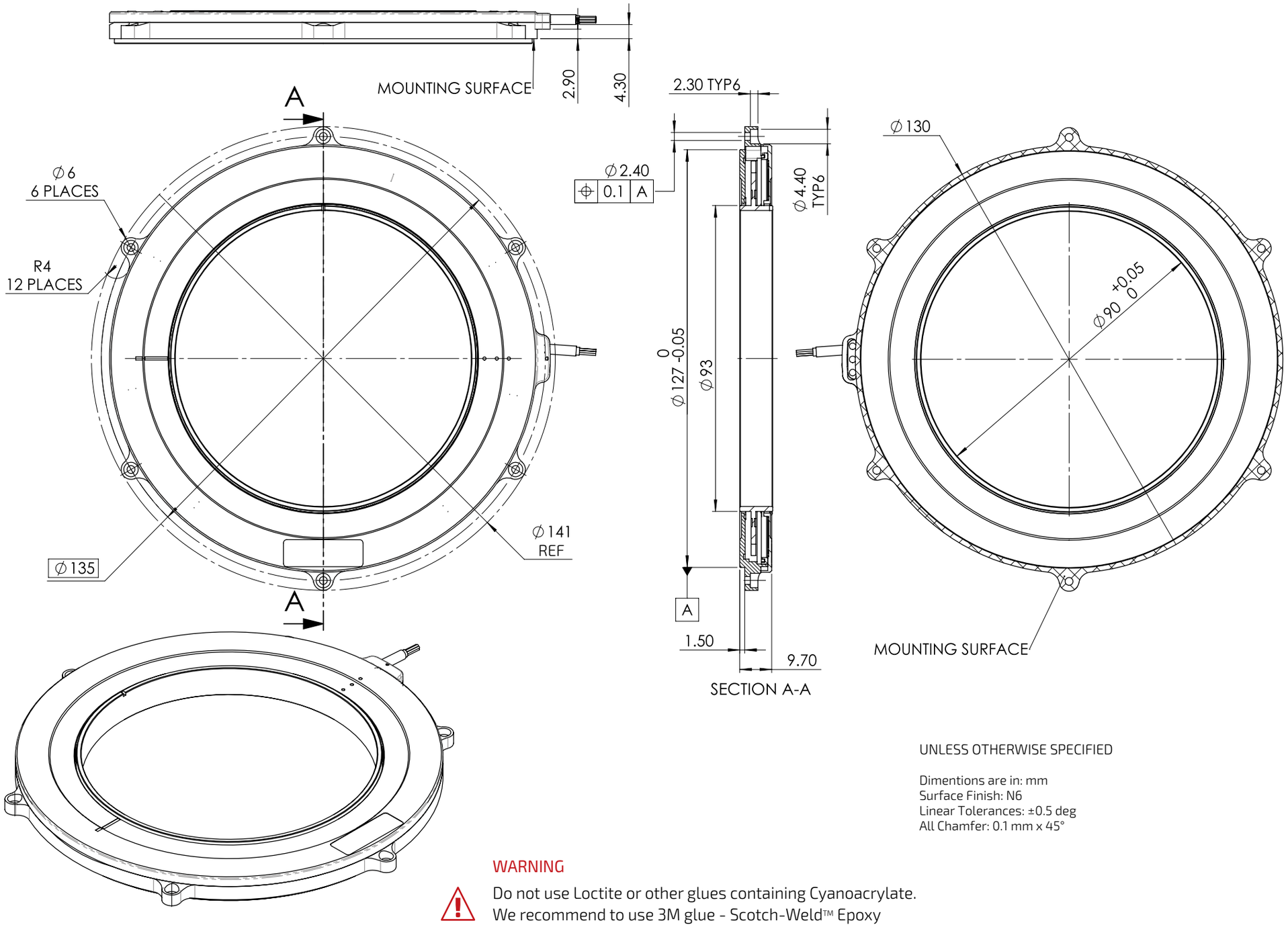
DS-90 User Manual: mechanical, electrical and calibration setup

Optional Accessories

Demonstration Kit

DKIT-DS-130-64-3SH-S0: Includes ,mounted encoder on rotary jig ,and RS-422 to USB converter.

ICD

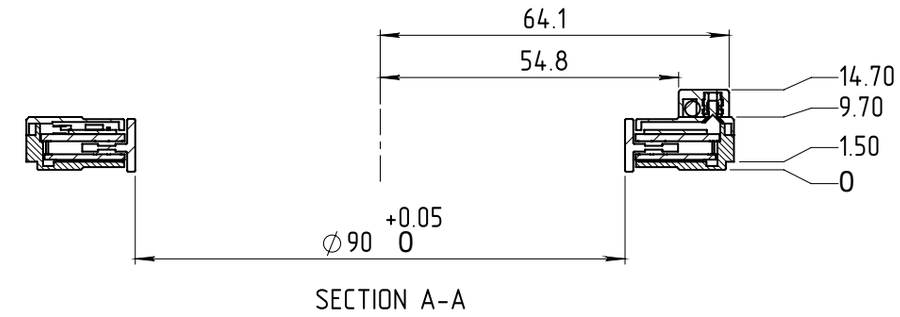


UNLESS OTHERWISE SPECIFIED

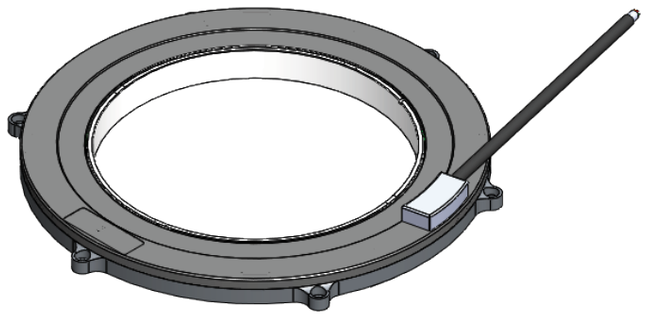
Dimentions are in: mm
Surface Finish: N6
Linear Tolerances: ±0.5 deg
All Chamfer: 0.1 mm x 45°

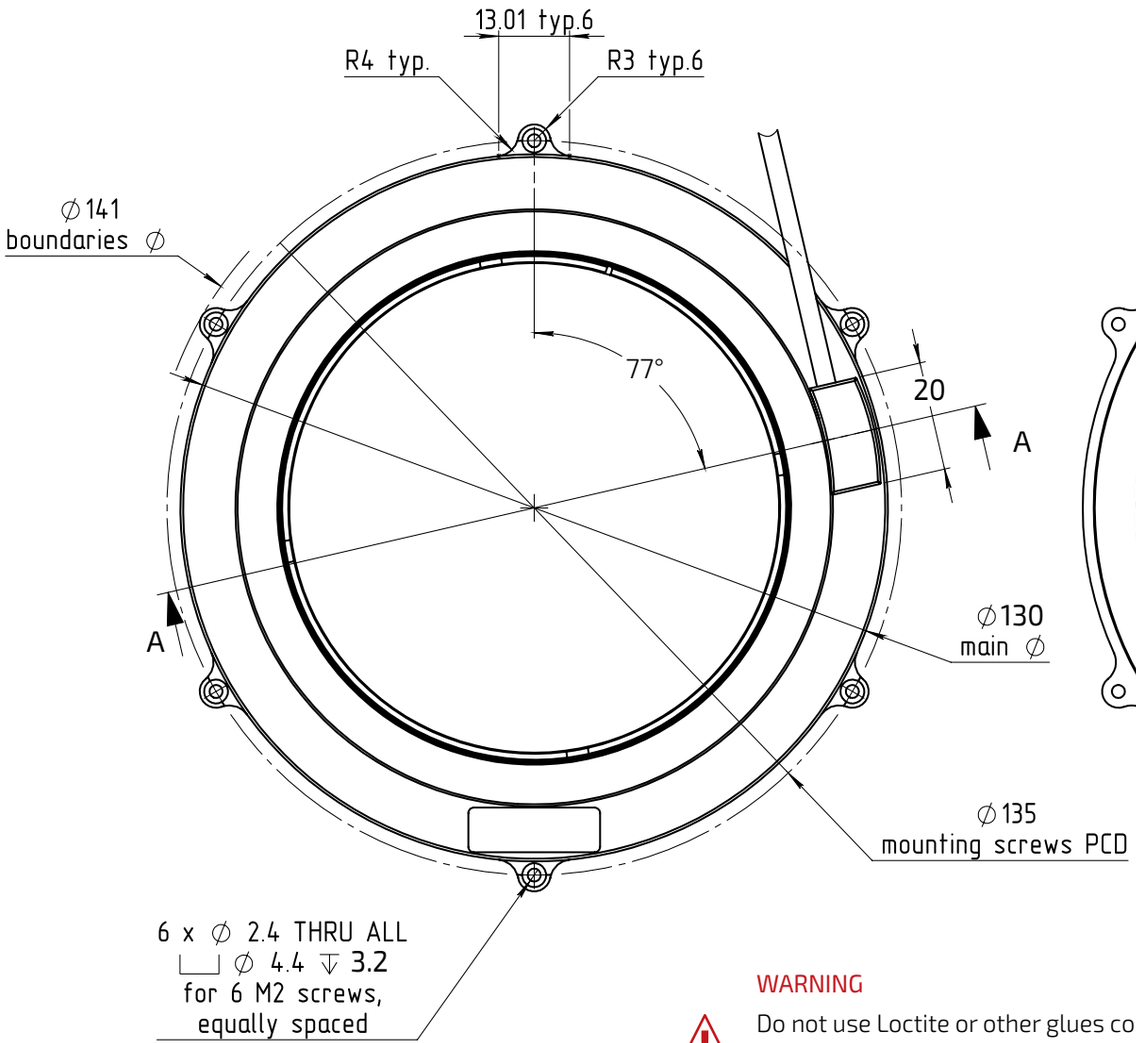
WARNING

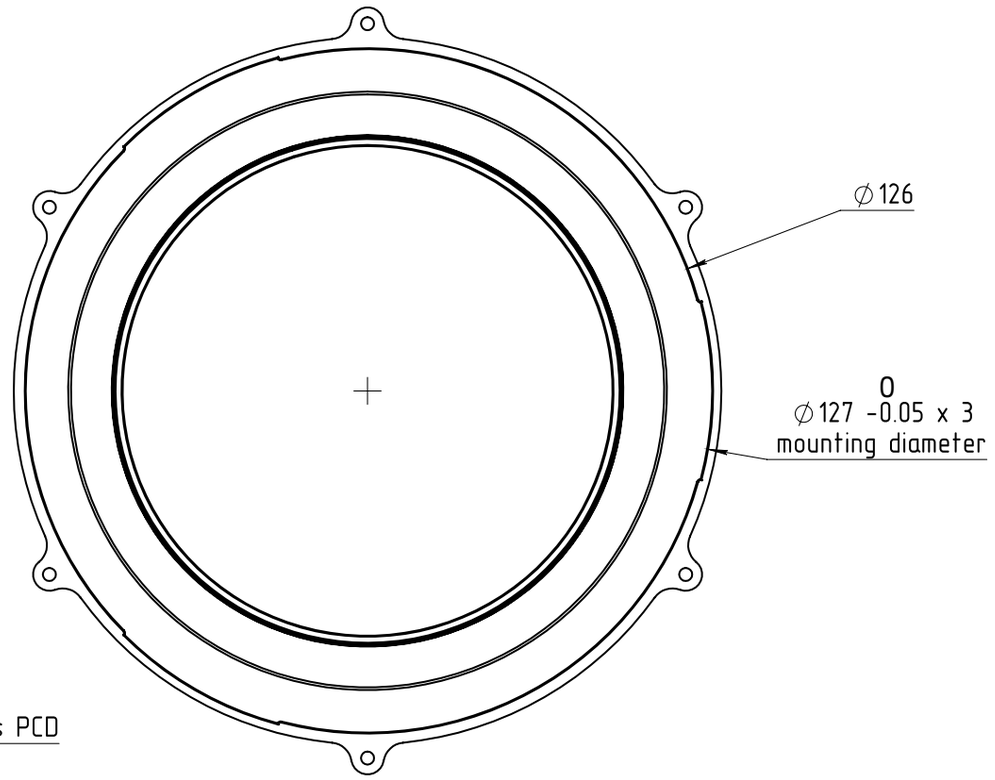
Do not use Loctite or other glues containing Cyanoacrylate.
We recommend to use 3M glue - Scotch-Weld™ Epoxy Adhesive EC-2216 B/A.



SECTION A-A







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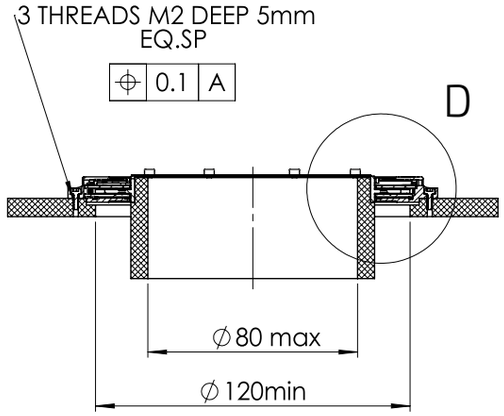
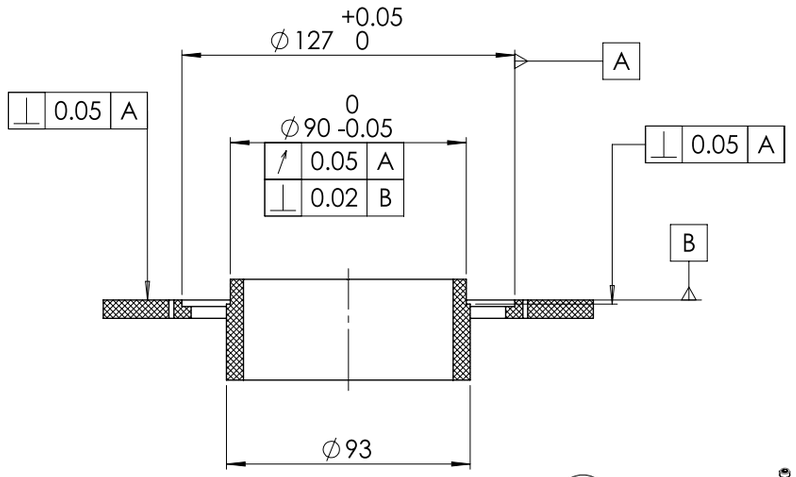
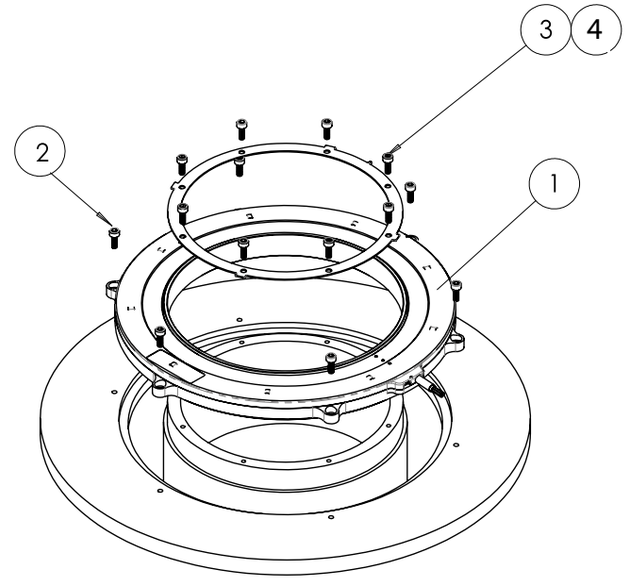
All Chamfer: 0.1 mm x 45°



SECTION A-A
SCALE 1 : 2

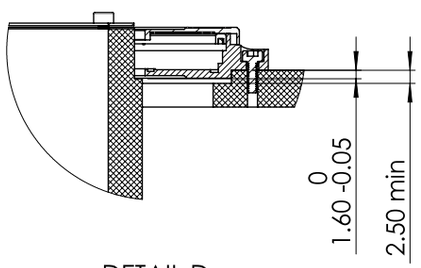


SECTION B-B
SCALE 1 : 2

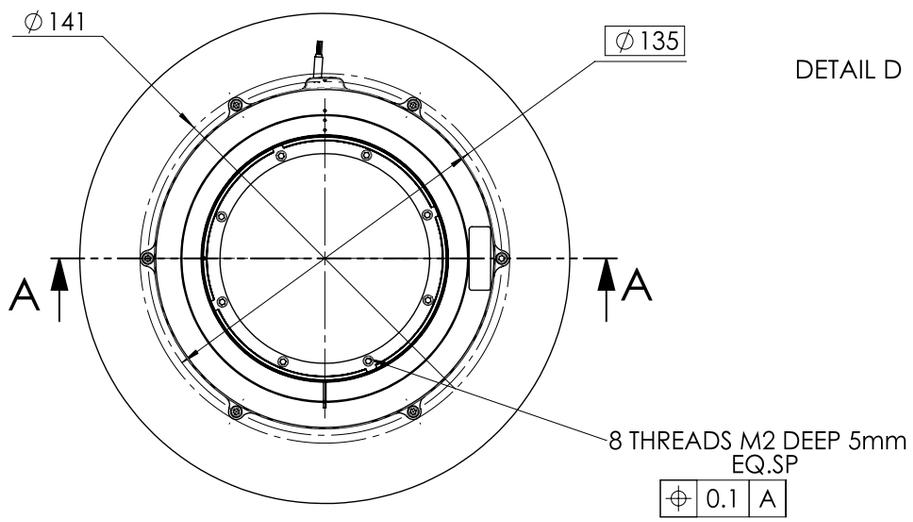


UNLESS OTHERWISE SPECIFIED

Dimentions are in: mm
Surface Finish: N6
Linear Tolerances: ±0.5 deg
All Chamfer: 0.1 mm x 45°



DETAIL D

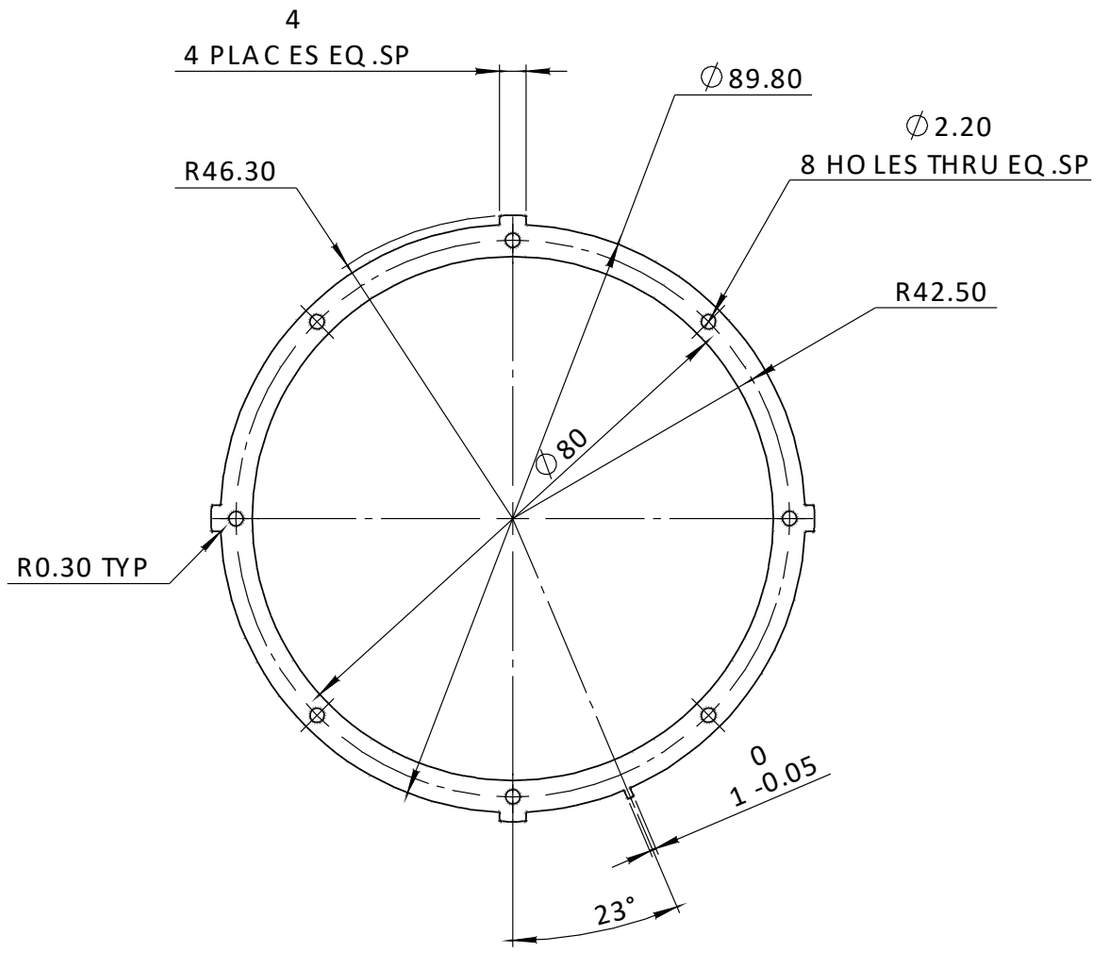


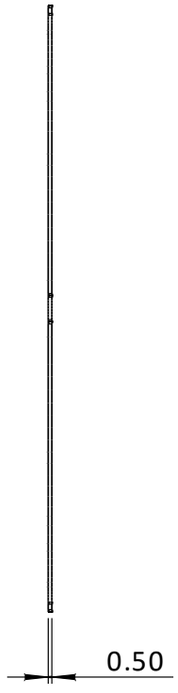
Shaft - End installation (step)

No	Part			Description	QTY.
1	DS-130-64-3SH	Included		DS-130 encoder	1
2	EAPK008	Optional	Kit	Kit, 3 M2x6	2
3	MA-DS130-004	Optional	Shaft End installation kit	MP-00016 DIN 912 M2 X 8 Alen	1
4				DS-130 wave spring	1

Critical dimensions marked with "*"

Spring - Shaft - End Installation





Notes

1) For any incompatibility with the model or missing dimension, please refer to Netzer for clarification.
2) Burrs are not allowed
3) Packing must prevent physical damage during process storage and shipment