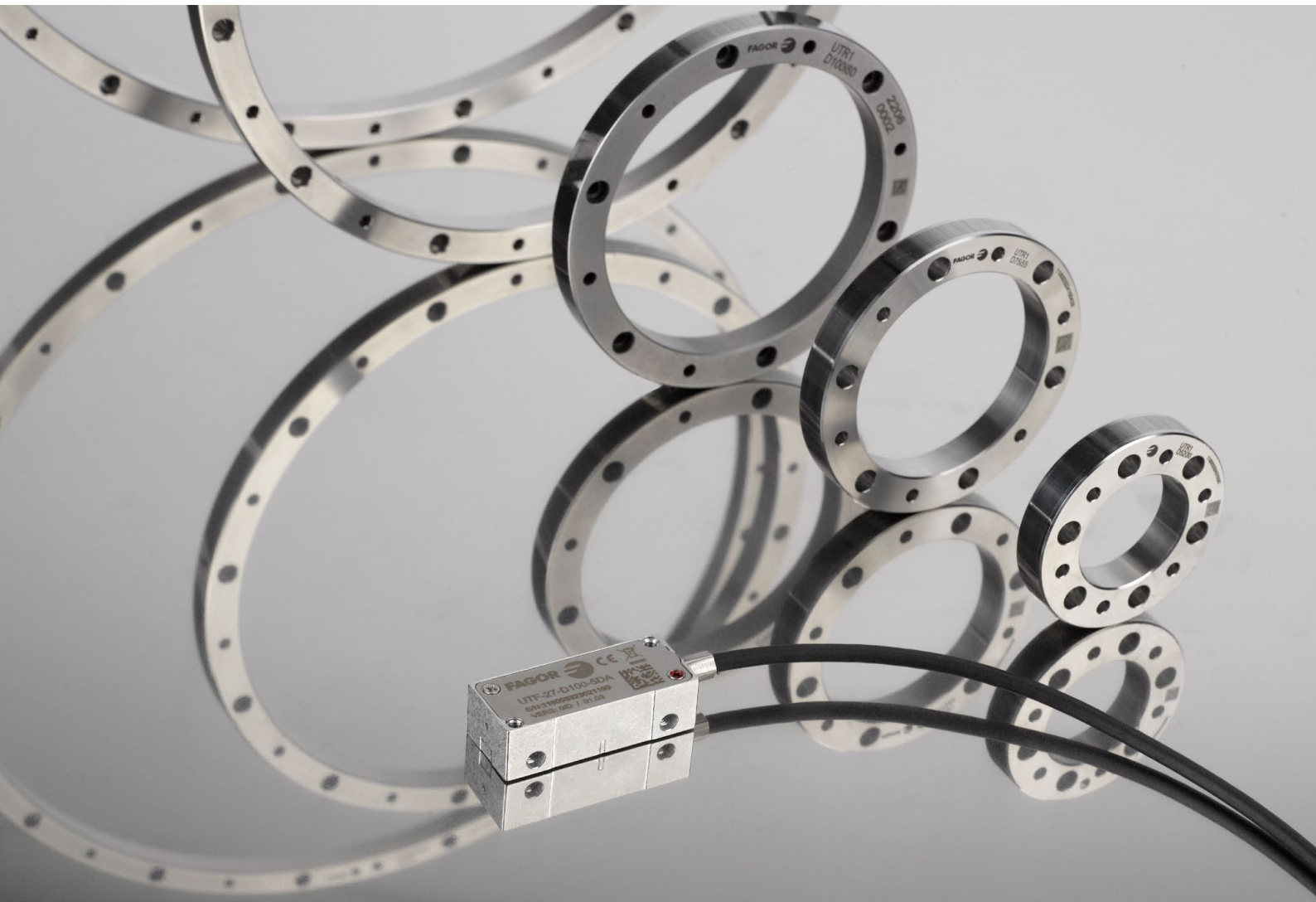
Angular encoder

ABSOLUTE WITHOUT INTEGRAL BEARINGS

FAGOR AUTOMATION

Open to your world




FAGOR
UTR1
D300i280
FAGOR
UTR1
D200i180
2307
0117
FAGOR
UTR1
D100i80
FAGOR
UTR1
D75i55
UTR1
D50i30

ANGULAR ENCODERS
WITHOUT INTEGRAL BEARINGS

OVER 45 YEARS OF CONTINUOUS EVOLUTION

Fagor Automation has been manufacturing high quality angular encoders using precision optical technology for more than 45 years.

Over the years Fagor has created, developed and patented systems, components and technologies that allow us to offer best quality and features over the complete range of product utilizing innovative production methods.

Hence making Fagor Automation the most efficient alternative in the world of feedback systems.

Angular encoder without integral bearings for angular position measurements

3Statech Technology

- The system comprises two components: the reader head and a stainless steel ring with the engraved graduation:
  - Motor does not require a higher torque to start rotating as the encoder is contact-less and without sealings between the parts.
  - It may need additional protection to reach the IP required by the application.
  - The modular system allows, if needed, for a quick and easy maintenance in comparison with other solutions with the encoder integrated in one system.
- Only one absolute track with patented **3STATECH** technology. Homing immediately after powering on the machine without moving the axis.
- The digital communication provides the position to the control system at high angular velocity.
- Excellent features together with the CNC system enable a smooth and reliable position control.
- Large mounting tolerances: easy alignment and assembly.
- Designed for applications such as semiconductor manufacturing equipment, testing and measuring systems, printers, rotary tables, as well as integration with rotary motors (typically C axis in lathes) or with DD (Direct Drive) motors.

UT series

Characteristics reader head

	UT	UTS	UTF	UTD	UTP
Interface	SSI		FANUC® αi	FeeDat®	PANASONIC®
Pitch	40 µm				
Maximum cable length	75 m (*)	100 m	50 m	100 m	30 m
Power supply	5V ± 10%; <200 mA (without load)				
Connection	With cable of 1, 3 or 5 meters and terminating connector included				
Protection	IP 40 DIN 40050				
Maximum vibration	300 m/s² (55 … 2000 Hz) IEC 60068-2-6				
Maximum shock	1000 m/s² (11 ms) IEC 60068-2-27				
Operating temperature	0 °C … 50 °C				
Storage temperature	-10 °C … 70 °C				
Weight	0.11 Kg				
Relative humidity	20 % … 80 % (without condensation)				

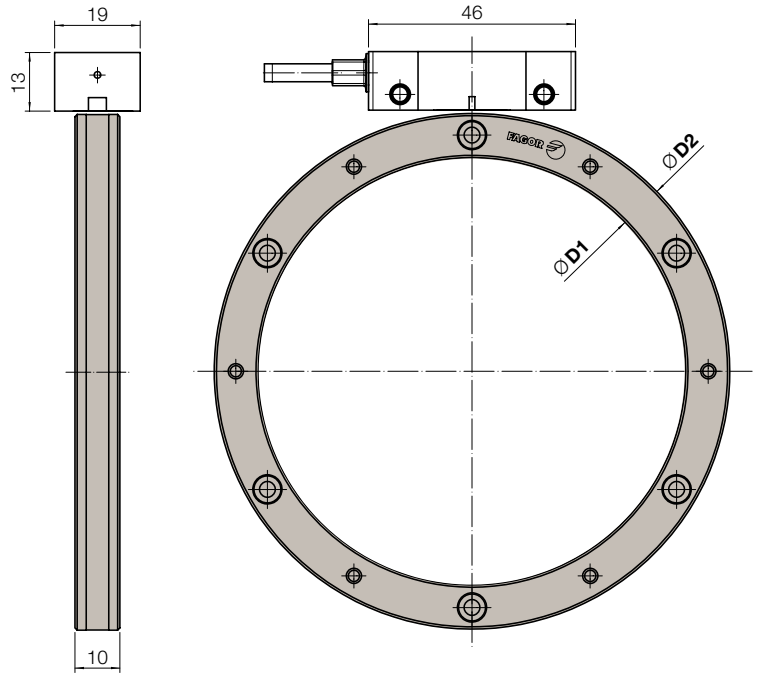
Characteristics graduated ring: UTR1

	D52i30	D57i37	D75i55	D100i80	D103i80	D104i80	D115i95
Measurement	Stainless steel ring with only one graduation of a sequential binary code						
Steel thermal expansion coefficient	α therm≈ 15.5 ± 0.5 ppm/K						
Graduation accuracy	< ± 6”			< ± 5”			
Resolution	23 bits; 26 bits (only BiSS® C)		27 bits; 26 bits (only BiSS® C)				
Measuring step	0.15”; 0.019” (BiSS® C)			0.0097”; 0.019” (BiSS® C)			
Internal diameter	see dimensions table						
External diameter	see dimensions table						
Maximum speed	6000 min⁻¹		4000 min⁻¹				
Moment of inertia	0.000062 Kg m²	0.000046 Kg m²	0.00017 Kg m²	0.00044 Kg m²	0.00053 Kg m²	0.00057 Kg m²	0.00067 Kg m²
Permissible axial movement	≤ ± 0.2 mm (ring graduation relative to the reader head)						
Protection	IP 00 (**)						
Weight	0.101 Kg	0.106 Kg	0.152 Kg	0.213 Kg	0.249 Kg	0.265 Kg	0.241 Kg

(*) Consult Fagor Automation for maximum cable length.

(**) Additional protection against solids and liquids needed if the application requires higher IP.

Dimensions in mm



D2 (mm)	D1 (mm)
52	30
57	37
75	55
100	80
103	80
104	80
115	95
150	130
200	180
209	186
229	209
255	235
300	280

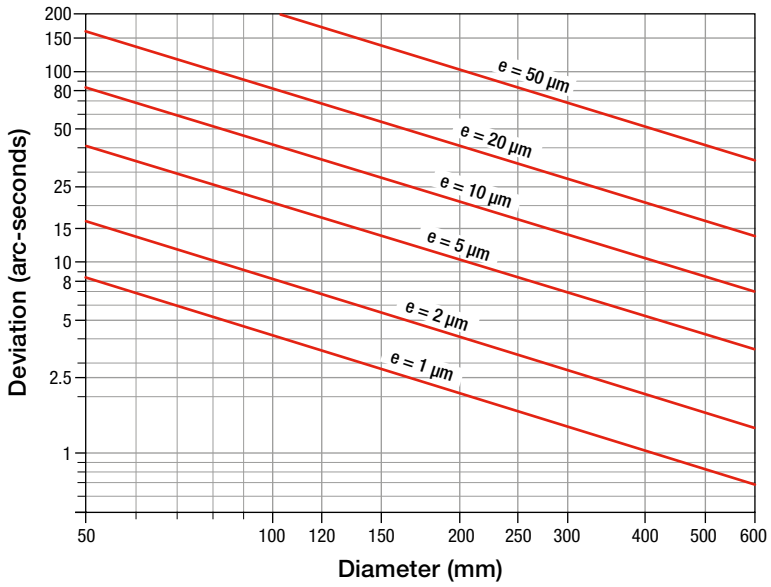
Resolution	Positions per turn
23 bits	8388608
26 bits	67108864
27 bits	134217728
28 bits	268435456

UTBC	UTM
BiSS® C	MITSUBISHI®
40 µm	
50 m	30 m
5V ± 10%; <200 mA (without load)	
With cable of 1, 3 or 5 meters and terminating connector included	
IP 40 DIN 40050	
300 m/s² (55 … 2000 Hz) IEC 60068-2-6	
1000 m/s² (11 ms) IEC 60068-2-27	
0 °C … 50 °C	
-10 °C … 70 °C	
0.11 Kg	
20 % … 80 % (without condensation)	

Additional information can be found in the technical documentation and installation manual available on the website ***www.fagorautomation.com***

D150i130	D200i180	D209i186	D229i209	D255i235	D300i280
Stainless steel ring with only one graduation of a sequential binary code					
α therm≈ 15.5 ± 0.5 ppm/K					
< ± 5”	± 3.5”			± 3”	± 2.5”
28 bits					
0.0048”					
see dimensions table					
see dimensions table					
3000 min^{-1}	2000 min^{-1}		1600 min^{-1}		1400 min^{-1}
0.0016 Kg m²	0.0041 Kg m²	0.0051 Kg m²	0.0062 Kg m²	0.0090 Kg m²	0.0146 Kg m²
≤ ± 0.2 mm (ring graduation relative to the reader head)					
IP 00 (**)					
0.332 Kg	0.452 Kg	0.520 Kg	0.515 Kg	0.594 Kg	0.693 Kg

Measurement error for different eccentricities as a function of the ring diameter



Order identification

Example: UTF-27-D100-1C9D + UTR1-D100i80

Reader head

UT	F	27	D100	1	C9D
Absolute reader head for systems with only one graduation	*Type of communication protocols:* • Blank space: SSI protocol (FAGOR) • S: SSI SIEMENS® (SL) protocol • **F: FANUC® (αi) protocol** • D: FeeDat® (FAGOR) protocol (1) • P: PANASONIC® (Matsushita) protocol • BC: BiSS® C protocol (2) • M: MITSUBISHI® CNC protocol full duplex	*Resolution:* • 23: 23 bits • 26: 26 bits (only for BiSS® C) • **27: 27 bits** • 26: 26 bits (only for BiSS® C) • 28: 28 bits	*Ring external diameter* • D52: 52 mm • D57: 57 mm • D75: 75 mm • **D100: 100 mm** • D103: 103 mm • D104: 104 mm • D115: 115 mm • D150: 150 mm • D200: 200 mm • D209: 209 mm • D229: 229 mm • D255: 255 mm • D300: 300 mm	*Cable length:* • **1: 1 meter** • 3: 3 meters • 5: 5 meters	*Connector:* • **C9D: connector M23 17 M** (3) • DA: FAGOR QUERCUS SUBD HD 15M • FN: FANUC® • PN5: PANASONIC® • MB: MITSUBISHI® • 0: without connector

Graduated ring

UTR	1	D100i80
Ring with only one graduation	*Type of ring (*):* • **1: width 10 mm** **Except:** Width 11.5 mm for D103i80 and D209i186 Width 12 mm for D104i80	*External diameter / Internal diameter:* • D52i30: 52 mm / 30 mm • D57i37: 57 mm / 37 mm • D75i55: 75 mm / 55 mm • **D100i80: 100 mm / 80 mm** • D103i80: 103 mm / 80 mm • D104i80: 104 mm / 80 mm • D115i95: 115 mm / 95 mm • D150i130: 150 mm / 130 mm • D200i180: 200 mm / 180 mm • D209i186: 209 mm / 186 mm • D229i209: 229 mm / 209 mm • D255i235: 255 mm / 235 mm • D300i280: 300 mm / 280 mm

(*) Width of the ring is the difference between the internal and external diameters divided by 2. Consult with Fagor the availability of other dimensions.

(1) Plus XC-C8-PA-DQ-M with DRIVE-CLiQ® protocol for SIEMENS® (Solution Line and Sinumerik One).

(2) Resolution for different diameters as indicated in the following column. For other resolutions with BiSS® C protocol, please consult Fagor.

(3) Only with 1 or 3 meter cable.

Other languages are available in the Downloads section from Fagor Automation's website.

Fagor Automation shall not be held responsible for any printing or transcribing errors in the catalog.

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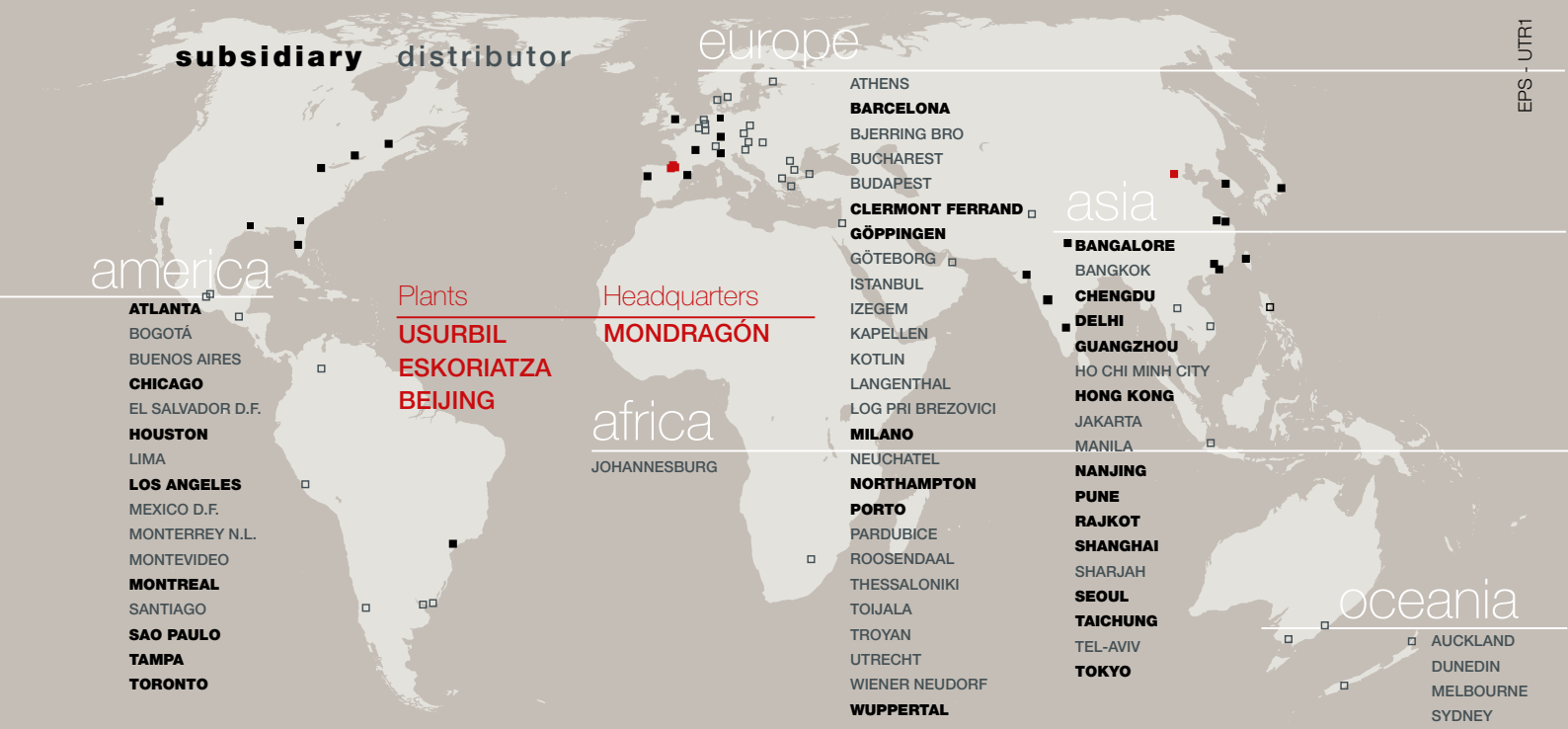
Fagor Automation holds the ISO 9001 Quality System Certificate and the CE Certificate for all products manufactured.

EPS - UTR1 EN 0225



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