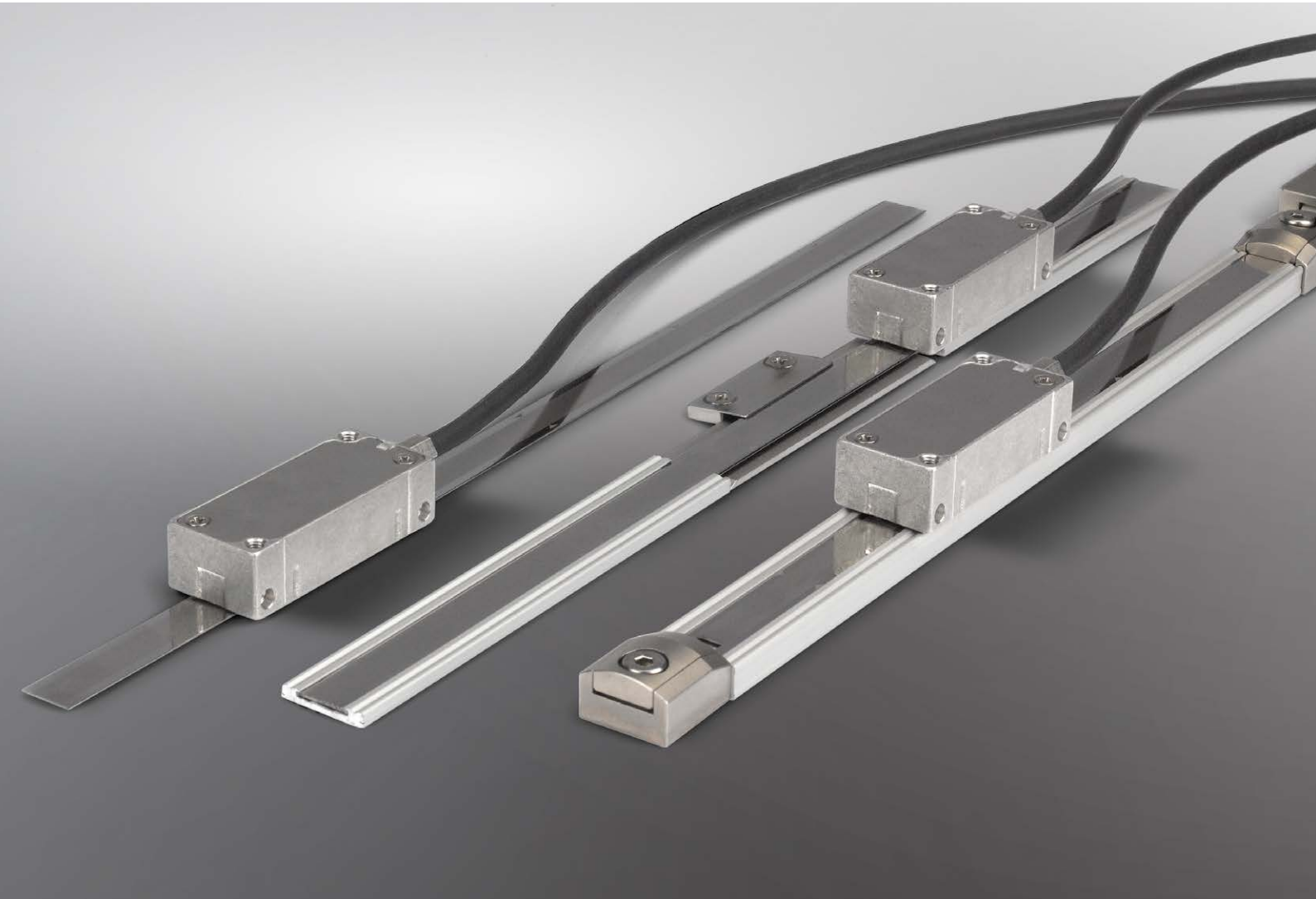
Non-contact open

INCREMENTAL LINEAR ENCODERS

FAGOR AUTOMATION

Open to your world



NON-CONTACT OPEN

INCREMENTAL LINEAR ENCODERS

FOR CONTROLLING
AND POSITIONING OF
LINEAR AXES

Aimed at applications for semiconductor manufacturing, testing and measurement systems and printing equipment, as well as integration with linear motors.

- It consists of two components, the reader head and a heavy-duty steel tape with engraved measuring graduation:
  - Motor start-up without the need for additional torque as there is no contact between the parts and no seals.
  - Additional protection may be required to achieve the IP levels suitable for the application.
  - The modular system enables easy and quick maintenance when necessary as opposed to solutions with the encoder integrated in a single system.
- With reference markings integrated in the incremental track to reduce the size. Reference marks selectable via magnets.
- 1 Vpp analogue or TTL digital output signals with resolution down to 25 nanometres.
- High precision and excellent repeatability together with the CNC system provide smooth and reliable control.
- Three different systems for securing the engraved tape (adhesive, guided or tensioned) to suit a variety of working conditions.
- 0.3 mm adhesive tape for easier assembly (cut to length).

Table of maximum speed for the models

MHZ Customer clock frequency	Edge separation (ns)	Resolution: 5 µm (m/s)	Resolution: 1 µm (m/s)	Resolution: 0.5 µm (m/s)	Resolution: 0.1 µm (m/s)	Resolution: 0.05 µm (m/s)	Resolution: 0.025 µm (m/s)
40	25	10	10	10	2.4	1.2	0.6
25	40	10	10	9	1.8	0.9	0.45
20	50	10	10	7.2	1.44	0.72	0.36
12	83	10	9	4.5	0.9	0.45	0.23
10	100	10	8	4	0.8	0.4	0.2
8	125	10	6.55	3.27	0.65	0.33	0.16
6	166	10	5.14	2.57	0.51	0.26	0.13
4	250	10	3.43	1.71	0.34	0.17	0.09
2	500	8.57	1.71	0.86	0.17	0.09	0.04

Characteristics

	ITRD	ITRX	ITRY	ITRW	ITRZ	ITRV	ITRP
Measurement	Incremental: by means of a 20 µm pitch graduated steel tape						
Steel thermal expansion coefficient	α therm≈ 11 ppm/K						
Measuring resolution	5 µm	1 µm	0.5 µm	0.1 µm	0.05 µm	0.025 µm	
Output signals	⊔⊓ Differential TTL						∿ 1 Vpp
Incremental signal period	20 µm	4 µm	2 µm	0.4 µm	0.2 µm	0.1 µm	20 µm
Reference marks Io	ITRD, ITRX, ITRY, ITRW, ITRZ, ITRV, ITRP: every 50 mm ITSD, ITSX, ITSY, ITSW, ITSZ, ITSV, ITSP: selectable via magnet						
Travel limits	Open collector, active low. Activation by magnets						
Maximum cable length	Up to 30 m (*)						
Supply voltage	5V ± 10 %; < 250 mA (without load)						5V ± 10 %; < 200 mA (without load)
Connection	1 or 3 metre cable included						
Reader head protection	IP 40						
Accuracy	± 5 µm/m (model with tensioned tape) ± 10 µm/m (models with adhesive or guided tape)						
Maximum vibration	200 m/s² (55 … 2000 Hz) IEC 60068-2-6						
Maximum shock	1000 m/s² (11 ms) IEC 60068-2-27						
Ambient operating temperature	0 °C … 70 °C						
Storage temperature	-20 °C ... 70 °C						
Relative humidity	20 °C ... 80 %						

(*) Dependent on cable type, readhead cable length and clocked output option.
Contact Fagor Automation for more information.

Order identification

Example: ITSW08-1C1 + ITA-270

Reader head

IT	S	W	08	1	C1
Incremental reader head	*Type of reference mark:* • R: incremental every 50 mm • **S: selectable via magnet**	*Type of signal:* • D: 5 µm resolution differential TTL • X: 1 µm resolution differential TTL • Y: 0.5 µm resolution differential TTL • **W: 0.1 µm resolution differential TTL** • Z: 0.05 µm resolution differential TTL • V: 0.025 µm resolution differential TTL • P: 1 Vpp sine wave	*Frequency:* • 02: 2 MHz • 04: 4 MHz • 06: 6 MHz • **08: 8 MHz** • 10: 10 MHz • 12: 12 MHz • 20: 20 MHz • 25: 25 MHz • 40: 40 MHz	*Length of cable:* • **1: 1 metre** • 3: 3 metres	*Connector:* • D: Sub D HD 15 M • H2: YASKAWA® • **C1: 12-pin M23 connector M-F thread** • C5: 12-pin M23 connector M-M thread

Tape

IT	A	270
Incremental tape with integrated reference marks	*Type of tape* • **A: 0.3 mm thick tape with adhesive** • G: 0.5 mm thick tape guided model • T: 0.5 mm thick tape tensioned model	*Measuring length: (*)* **In the example: 270: 270 mm**

Guides

PG	PT	PTS
Adhesive guide for guided tape	Adhesive guide for tensioned tape	Bolted guide for tensed tape
	Length: For example: 30 = 300 mm	

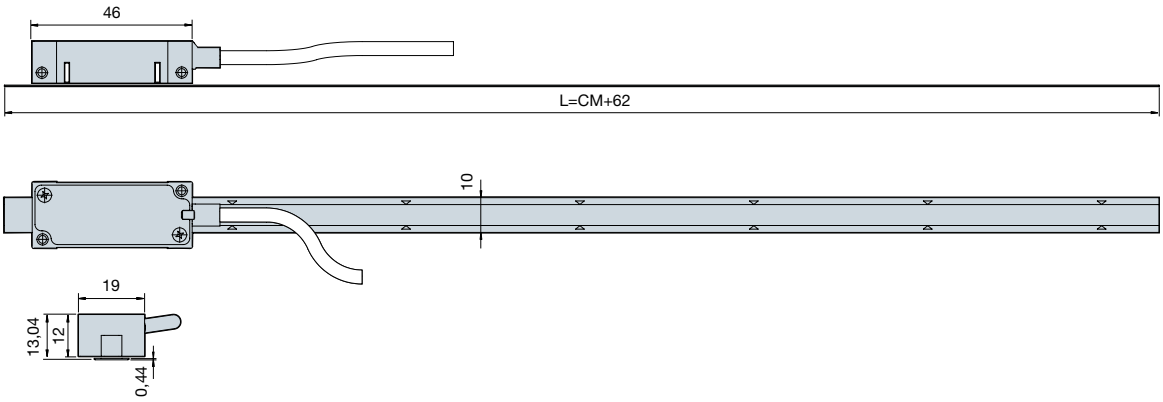
(*): Adhesive tape: available from 70 mm to 16,020 mm in 50 mm increments
Guided tape: available from 240 mm to 6,040 mm in 100 mm increments.
Tensioned tape: available from 140 mm to 30,040 mm in 100 mm increments.

ITA, ITG, ITT

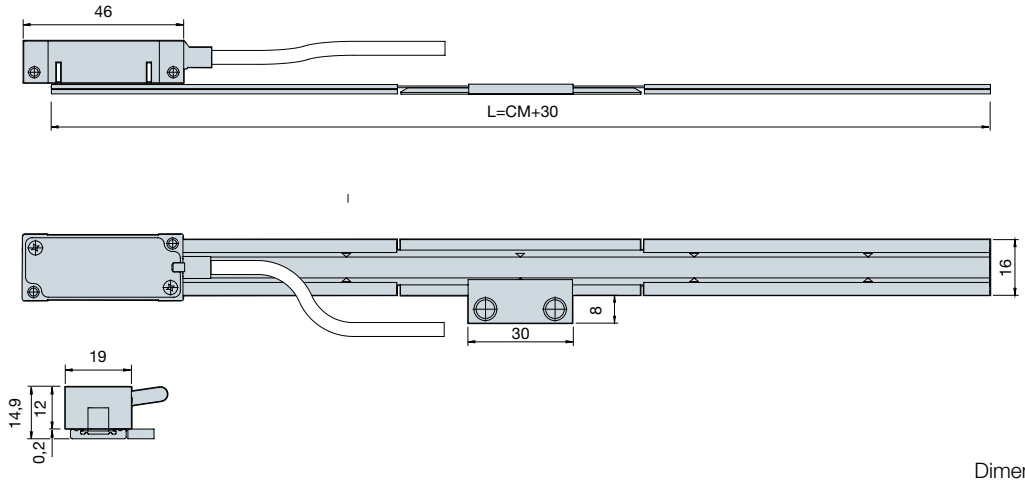
ITA ADHESIVE MODEL

ITG GUIDED MODEL

ITT TENSIONED MODEL



Dimensions in mm



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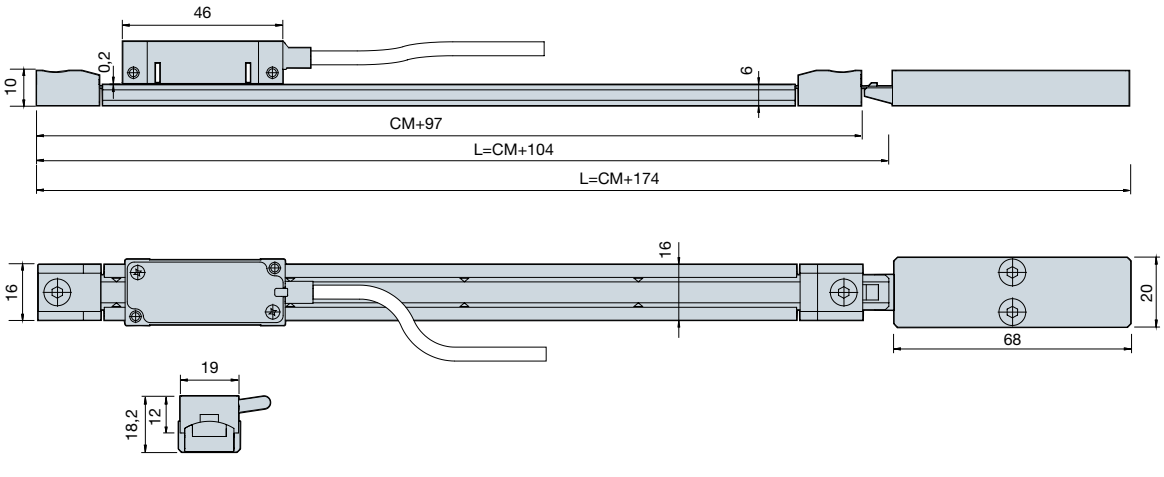

Dimensions in mm

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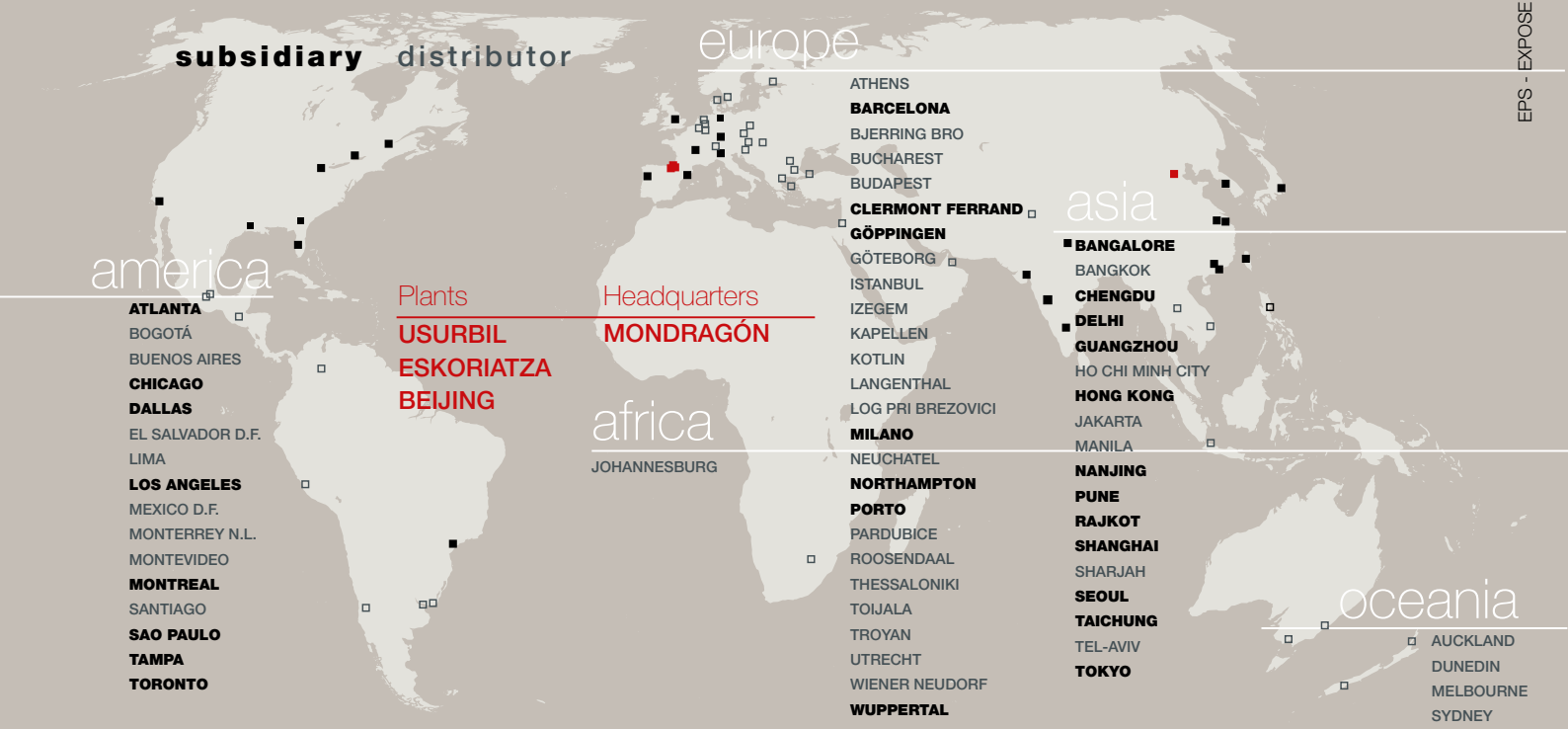

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