

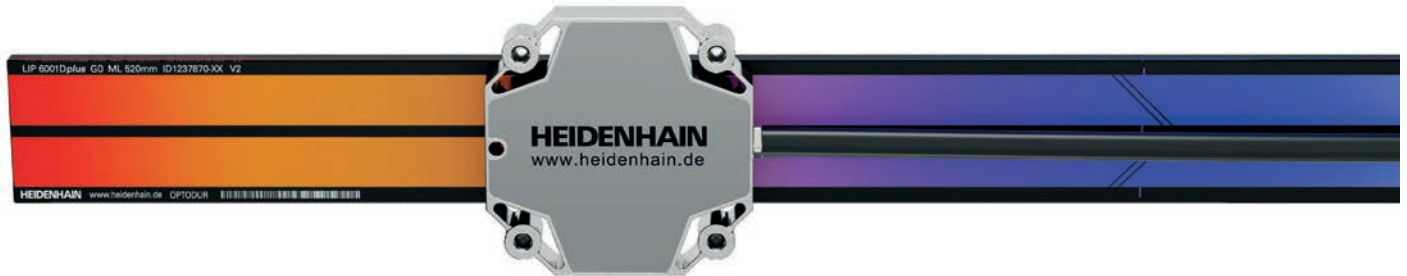
LIP 6031 Dplus

[LIP 6000Dplus series](#)



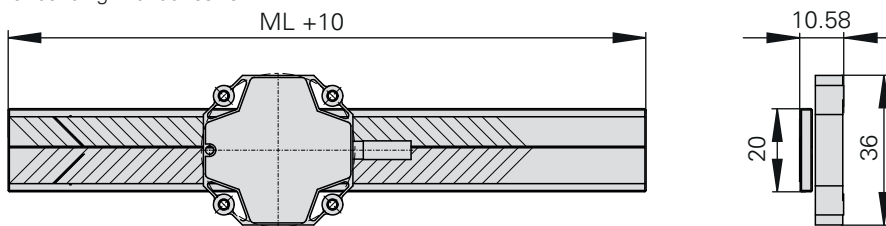
Incremental exposed linear encoder

- Two diagonal graduations $\pm 45^\circ$ for measuring the primary and secondary directions
- Scale made of glass ceramic

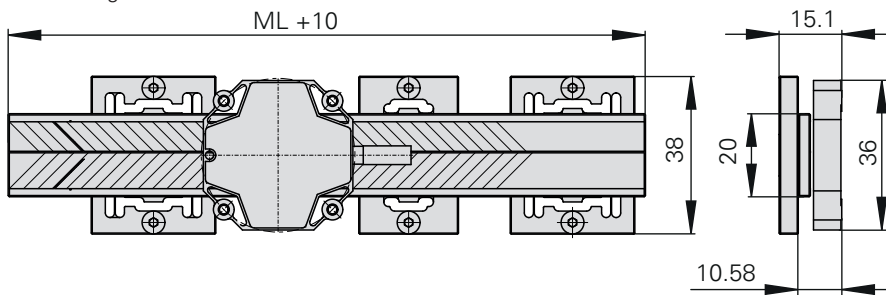


Main dimensions (without tolerances)

Mating dimensions
for bonding with adhesive film



Mating dimensions
for fastening with flex elements



For technical drawings, visit www.heidenhain.com/documentation.



Mating dimensions (bonded)

[ID 1359299](#)



Mating dimensions (flex elements)

[ID 1471886](#)

Scale	LIP 6001 <i>Dplus</i>													
Measuring standard Coefficient of linear expansion	OPTODUR phase grating on Zerodur glass ceramic; graduation period: 8 µm $\alpha_{\text{therm}} \approx (0 \pm 0.1) \cdot 10^{-6} \text{ K}^{-1}$													
Accuracy grade	X direction: ±3 µm; Y direction: ±20 µm													
Baseline error	X direction: ±0.175 µm/5 mm; Y direction: ±0.350 µm/5 mm													
Measuring length (ML) in X direction in mm*	70 770 2240	120 820 2440	170 870 2640	220 920 2840	270 970 3040	320 1020	370 1140	420 1240	470 1340	520 1440	570 1540	620 1640	670 1840	720 2040
Measuring length in Y direction	±2 mm													
Reference mark	One at 68 mm from beginning of measuring length (for ML up to 120: at midpoint of ML)													
Mass	0.15 g/mm													

Scanning head	AK LIP 603 Dplus
Data interface	EnDat 3
Ordering designation	E30-R4
Measuring step	172 pm
Availability of position value	X direction: $< 11 \text{ µs}$ at 12.5 Mbit/s; $< 8.2 \text{ µs}$ at 25 Mbit/s ¹⁾ Y direction: $< 18.7 \text{ µs}$ at 12.5 Mbit/s; $< 12.1 \text{ µs}$ at 25 Mbit/s ²⁾
Traversing speed	$\leq 240 \text{ m/min}$ ³⁾
Interpolation error	$\pm 5 \text{ nm}$
RMS position noise	0.5 nm (1 MHz)
Electrical connection	Cable (0.5 m / 1 m / 3 m) with interface electronics in the connector (15-pin D-sub (male))
Cable length	12.5 Mbit/s: $\leq 100 \text{ m}$; 25 Mbit/s: $\leq 40 \text{ m}$ During signal adjustment with the PWM 21: $\leq 3 \text{ m}$
Supply voltage	DC 3.6 V to 14 V (recommended: 12 V)
Power consumption ⁴⁾ (max.)	3.6 V: $\leq 1.5 \text{ W}$; 14 V: $\leq 1.8 \text{ W}$
Current consumption	At 12 V: 110 mA (without load, typical)
Vibration 55 Hz to 2 kHz Shock 11 ms	$\leq 500 \text{ m/s}^2$ (EN 60068-2-6) $\leq 1000 \text{ m/s}^2$ (EN 60068-2-27)
Operating temperature	-10 °C to 70 °C
Mass Scanning head APE connector Cable	30 g 77 g 36 g/m

* Please select when ordering

¹⁾ This value is stored as the parameter XEL.timeHPFout in the encoder and indicates the time interval between the position-value request (latch) and the availability of the position value in the master (without cable influences)

²⁾ With transmission in the first LPF

³⁾ Maximum traversing speed when crossing the reference mark: 120 m/min

⁴⁾ See "General electrical information" in the *Interfaces of HEIDENHAIN Encoders* brochure

LIP 6081 Dplus

[LIP 6000Dplus series](#)



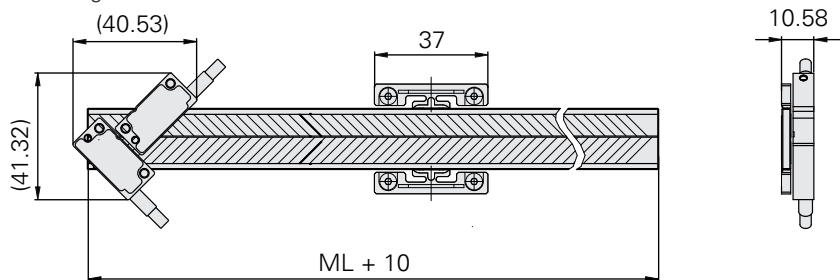
Incremental exposed linear encoder

- Two diagonal graduations $\pm 45^\circ$ for measuring the primary and secondary directions
- Scale made of glass ceramic

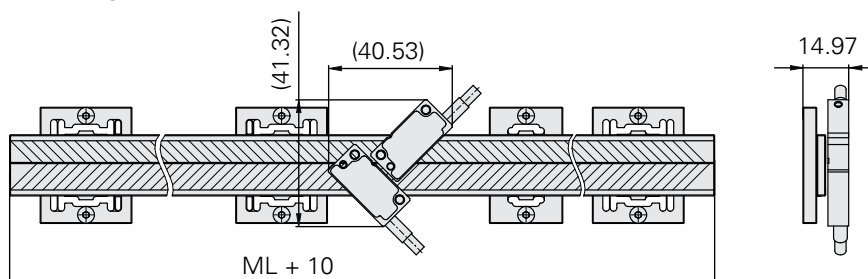


Main dimensions (without tolerances)

Mating dimensions
for bonding with adhesive film



Mating dimensions
for fastening with flex elements



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Mating dimensions (bonded)

[ID 1407768](#)



Mating dimensions (flex elements)

[ID 1418362](#)

Scale	LIP 6001 Dplus													
Measuring standard Coefficient of linear expansion	OPTODUR phase grating on Zerodur glass ceramic; grating period: 8 µm $\alpha_{\text{therm}} = (0 \pm 0.1) \cdot 10^{-6} \text{ K}^{-1}$													
Accuracy grade	X direction: $\pm 3 \text{ µm}$; Y direction: $\pm 20 \text{ µm}$													
Baseline error	X direction: $\pm 0.175 \text{ µm/5 mm}$; Y direction: $\pm 0.350 \text{ µm/5 mm}$													
Measuring length (ML) in X direction in mm	70	120	170	220	270	320	370	420	470	520	570	620	670	720
	770	820	870	920	970	1020	1140	1240	1340	1440	1540	1640	1840	2040
	2240	2440	2640	2840	3040									
Measuring length in Y direction	$\pm 2 \text{ mm}$													
Reference mark	One at 68 mm from beginning of measuring length (for ML up to 120: at midpoint of ML)													
Mass	0.15 g/mm													
Scanning head	LIP 608 Dplus													
Data interface	1 V _{PP}													
Signal period	4 µm													
Cutoff frequency -3 dB	$\geq 1 \text{ MHz}$													
Traversing speed	$\leq 240 \text{ m/min}^{1)}$													
Interpolation error	$\pm 5 \text{ nm}$													
RMS position noise	0.5 nm (1 MHz)													
Electrical connection	Cable (0.5 m / 1 m / 3 m) with interface electronics in the connector (15-pin D-sub (male))													
Cable length	With HEIDENHAIN cable $\leq 20 \text{ m}$ During signal adjustment with the PWM 21: $\leq 3 \text{ m}$													
Supply voltage	DC 5 V $\pm 0.5 \text{ V}$													
Current consumption	$\leq 150 \text{ mA}$													
Vibration 55 Hz to 2 kHz Shock 11 ms	$\leq 500 \text{ m/s}^2$ (IEC 60068-2-6) $\leq 1000 \text{ m/s}^2$ (IEC 60068-2-27)													
Operating temperature	-10 °C to 70 °C													
Mass	Scanning head	$\approx 5 \text{ g}$ (without connecting cable)												
	APE connector	$\approx 71 \text{ g}$												
	Cable	$\approx 24 \text{ g/m}$												

¹⁾ Maximum traversing speed when crossing the reference mark: 120 m/min