METIRIO® 2D+1

METIRIO® 2D+1 is a compact, high-precision Multi-DoF optical encoder system designed for the simultaneous measurement of linear position, lateral deviation and angular tilt.

Based on three optical incremental encoder readheads and a patterned scale, the system enables 3-DoF motion measurement within a minimal footprint. In addition to precise position detection along the x-axis, METIRIO® 2D+1 measures deviations from the ideal linear path in y-direction as well as angular misalignment of the moving axis.

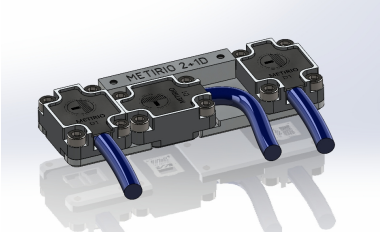

Image 2: Example of angular hysteresis in a linear motion system over a travel range of 1.2 mm

By extending the capabilities of METIRIO® 2D with an additional degree of freedom, METIRIO® 2D+1 provides a comprehensive multi degree-of-freedom encoder solution for characterizing nad monitoring linear motion with high precision.

The METIRIO® 2D+1 readhead is equipped with three D-SUB 15 male connectors, providing differential analog signals as well as I²C interface access, while an optional interpolation module enables BiSS-C communication and standard ABZ quadrature outputs; with electrical and optical specifications identical to those of the base METIRIO readhead, METIRIO® 2D+1 is ideal for precision positioning systems, motion platforms and metrology applications where axis accuracy, straightness and angular behavior are critical.

The **METIRIO®** 2D+1 is a 3-DoF Optical Encoder for Multi Degree-of-Freedom Motion Measurement.

	Key Benefits
Compact Size [mm]	45.4 x 15.0 x 6.18
Low Current Consumption [mA]	20
Position Resolution [nm]	< 1 nm
High Speed [m/s]	10
Central Wavelength [nm]	850 (Invisible)

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	Electrical Data
Supply Voltage VDD [V]	3 to 5.5
Output Position Signal (sine) [Vpp]	1
Output Reference Signal (square) [VDD]	RS485
Bandwidth (f3dB) [kHz]	500
ESD Susceptibility (HBM) [kV]	4 at each pin
Startup Time [µs]	150
Digital Interface	TWI
	Environment
Operating temperature range [°C]	0 - 80
Humidity (40 °C) [%]	80 non-condensing
Vibration EN 60068-2-6	500 m/s2, 2000 Hz
Shock EN 60068-2-27	1000 m/s2, 11 ms
	Scale Compatibility
Grating Type	reflective
Scale Pitch [µm]	20
Scale Type	2D, grid type, glass
Allowed Working Distances [mm]	1.2 mm (standard)

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