## 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.

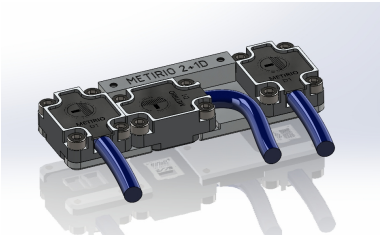


*Image 2: Example of angular hysteresis in a linear motion system over a travel range of 1.2 mm*

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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