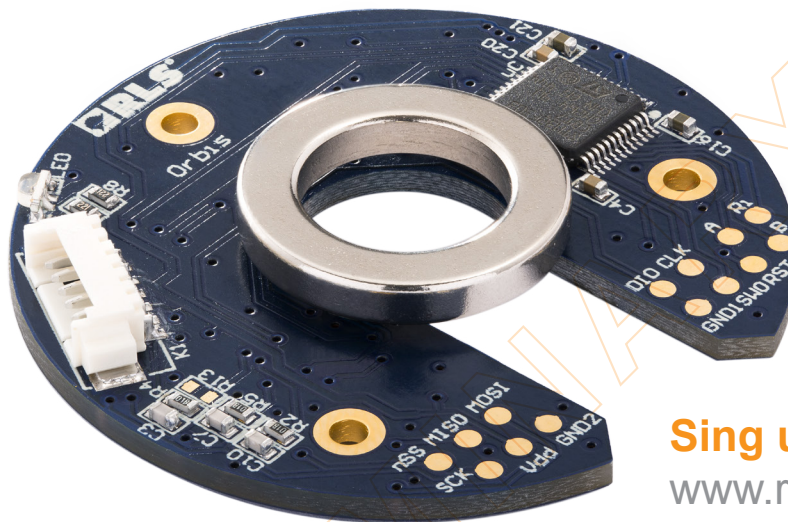


Orbis™ true absolute rotary encoder

Beta samples

Available February 2016



Sing up for beta sample
www.rls.si/orbis

Features

Orbis™ is a true absolute rotary encoder suitable for applications where a typical OnAxis encoder cannot be mounted due to space constraints at the end of the rotating shaft.

The encoder comprises a diametrically magnetized permanent magnet ring and a printed circuit board with magnetic field sensors and processing electronics that support various communication protocols. Magnetic field is measured by 8 RLS' proprietary Hall sensors. Their geometric arrangement on the PCB enables generation of one period of sine and cosine signals per

mechanical magnet revolution. Moreover, it also enables the cancellation of third harmonic component that becomes non-negligible at low magnet ride height.

Orbis encoder samples the position every 10 μs . This time also includes speed calculation as well as adaptive averaging function that ensures high resolution at low rotation speeds and low angle phase delay at high rotation speeds. Additional self-calibration algorithm improves encoder's accuracy that is decreased due to poor installation tolerances after assembly.

- **True absolute OnAxis™ operation principle**
- **14 bit resolution**
- **8 proprietary Hall sensor ASICs**
- **Through-hole design enables its mounting anywhere along the shaft**
- **3rd harmonic cancellation**
- **Self-calibration after assembly**
- **Adaptive angle filtering for decreasing noise**
- **No hysteresis**
- **Built-in self-monitoring**
- **Status LED**
- **SPI, SSI, BiSS-C, PWM, and asynchronous serial communication over RS422**

Orbis™ technical specifications

System data	
Reading type	Axial reading
Resolution	14 bit
Maximum speed	> 10,000 rpm
Encoder accuracy	±0.2°
Hysteresis	Less than unit of resolution
Repeatability	±2 LSB
Latency	< 0.2° up to 1000 rpm
Electrical data	
Supply voltage	4 V to 6 V – voltage on readhead
Set-up time	TBD
Power consumption	<100 mA
Output load	PWM, SPI, SSI Max. ±20 mA
	RS422 120 mA short term, 60 mA limited
ESD protection	HBM, Class 2, max. ±2 kV (as per Mil-Std 883 Method 3015.7)
Mechanical data	
Available magnet size	19 mm (OD), 12 mm (ID), 3 mm (thickness)
Encoder outer diameter	45 mm
Encoder hole diameter	13 mm
Environmental data	
Operating temperature	-40 °C to +105 °C
Humidity	TBD
Environmental protection	TBD
External magnetic field	TBD

Status indicator LED

LED	Status
Green	Normal operation – position data is valid.
Orange	Warning; position is valid, but the resolution and/or accuracy might be out of specification. Some operating conditions are outside limits.
Red	Error – position data is not valid
No light	No power supply.

Orbis™ dimensions

Dimensions and tolerances in mm.

