EXALOS Balanced Receiver | EBR

Applications

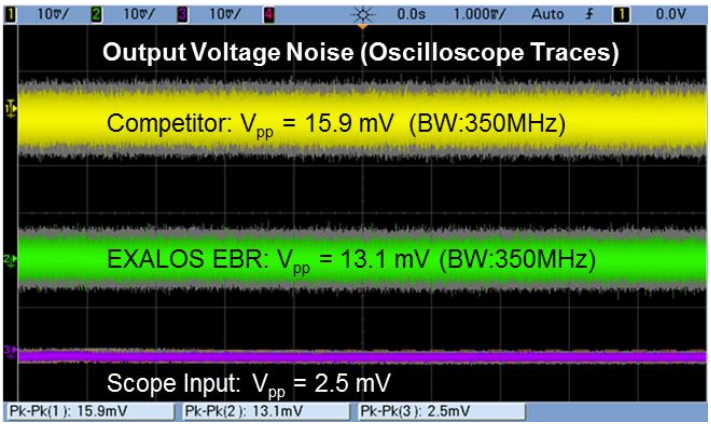
- Optical Coherence Tomography
- Optical Delay Measurements
- Spectroscopy
- Heterodyne Detection

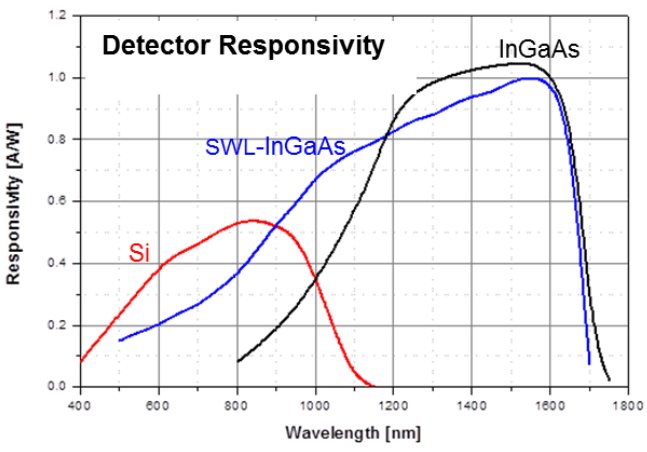
Product Features

- Adjustable-Bandwidth (80-350 MHz) and Fixed-Bandwidth (100, 200 MHz) Models
- Ultra-Low Noise Performance
- Electrically-Switchable Gain (high/low gain selection via TTL signals)
- Well-matched Photodiodes to achieve high common-mode rejection
- Two Monitor Outputs (DC-400 kHz)
- Compact OEM form factor
- Single +5V power supply

Description

The EXALOS optical balanced receiver (EBR) is engineered particularly to support challenging applications such as Optical Coherence Tomography where high signal-to-noise performance is critical. It achieves the lowest noise performance of balanced receivers in this bandwidth range. It features a compact design and a single supply voltage for OEM applications and allows for electrically switching the gain or for continuously adjusting the bandwidth. Contact EXALOS for customized versions tailored to your requirements.





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Version: EBR-2018-A

Technical Specification

EBR Part #	λ Range (nm)	Detector Type [1]	DC/AC [2] -Coupled	Bandwidth [3] (MHz)	Gain (V/A) [4] @ 50 Ohm	Noise Floor (dBm/Hz)	Saturation Power -CW (dBm)	Gain Flatness (dB)
370003-02	900 – 1700	$InGaAs_{SWL}$	DC	DC – 80/350	5×10^3	-140	-4	5
370004-02	900 – 1700	$InGaAs_{SWL}$	AC	0.03 – 80/350	5×10^3	-140	-4	5
370005-02	1200 – 1700	InGaAs	DC	DC – 80/350	5×10^3	-140	-4	5
370006-02	1200 – 1700	InGaAs	AC	0.03 – 80/350	5×10^3	-140	-4	5
370009-02	900 – 1700	$InGaAs_{SWL}$	DC	DC – 100	40×10^3	-122	-13	2
370010-02	900 – 1700	$InGaAs_{SWL}$	AC	0.03 - 100	40×10^3	-122	-13	2
370011-02	1200 – 1700	InGaAs	DC	DC – 100	40×10^3	-122	-13	2
370012-02	1200 – 1700	InGaAs	AC	0.03 - 100	40×10^3	-122	-13	2

Common Mode Rejection Ratio (Typical)	30 dB
Max. Electrical Output Signal	±1.8 V
Overall Output Voltage Noise (Typical) [5]	0.8 – 3 mVrms
Noise Equivalent Power (Typical) [6]	5 – 6 pW/√Hz
Operating Temperature	-20 to +65 °C
Supply Voltage	5.0 (4.8 to 5.2) V
Dimensions	64 × 46 × 30 mm
Optical Connector [7]	FC Receptacle

Notes:

1. (900-1700 nm): Short-λ enhanced $InGaAs_{SWL}$ photodiode responsivity of ~ 0.75 A/W at 1060 nm, 0.85 A/W at 1310 nm, 1.0 A/W at 1550 nm. Short-λ enhanced InGaAs PDs (good for 1060nm applications) have extremely low back reflection, thus preventing line artifacts in OCT imaging.
   (1200-1700 nm): Standard InGaAs photodiode responsivity of ~ 0.40 A/W at 1060 nm, 1.0 A/W at 1310 nm, 1.1 A/W at 1550 nm.
   Silicon photodetectors for 400 – 900 nm also available upon request.
2. f-3dB = 30 kHz, other cut-off frequencies available upon request
3. For models 370003 to 370006: Electro-optical bandwidth is continuously adjustable from 80 MHz to 350 MHz; other ranges available on request
4. For models 370003 to 370006: Electrically-switchable gain with TTL signals: HIGH = 5×10^3 & LOW = 5×10^1 @ 50 Ω termination
5. For models 370003 to 370006: Output voltage noise at 350 MHz is 0.8 mVrms; smaller at lower bandwidth, e.g. 0.4 mVrms at 200 MHz; for models 370009 to 370012: Output voltage noise ~ 3 mVrms;
6. For models 370003 to 370006: Noise Equivalent Power (NEP) is measured from DC to 100MHz.
   For models 370009 to 370012: NEP is measured from DC to 10MHz.
7. The FC adapters are aligned for 9/125µm single-mode fiber with APC connectors. When using FC/PC connectors, minimal alignment errors may occur due to the small detector size, which will result in a reduced output signal. In general, multi-mode fiber at the input can be used, too, but in this case the light beam spot diameter exceeds the active area of the detector, which results in a reduced output signal as well.

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