

# Lidar Products Selection Guide

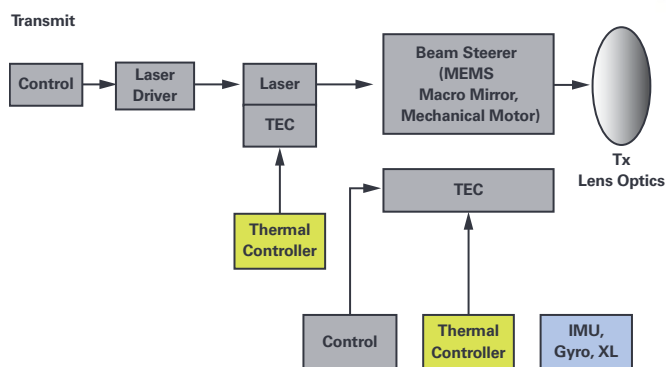
Analog Devices has a rich set of high performance signal chain and power management components to build virtually any lidar system. These products are acceptable for pulsed time of flight (ToF) or continuous wave (CW) systems, as well as systems built around wavelengths ranging from 900 nm to 1500 nm. Going forward, Analog Devices will be releasing key electrical products that will be optimally configured for these lidar systems.

## Time of Flight (ToF)

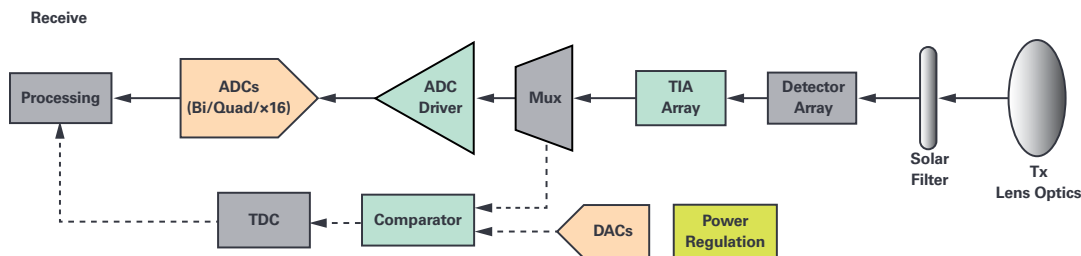
The ToF principle uses high power optical pulses in durations of nanoseconds to illuminate the scene. The measured time for the pulses of light to go out and return to the pulsed lidar system is directly proportional to the distance between the pulsed lidar system and the detected objects.

## Continuous Wave (CW)

The CW principle continuously uses either amplitude modulation (AM) or frequency modulation (FM) of the light source. In AMCW lidar systems, the transmitted signal's frequency is held constant while the amplitude is modulated. The distance between the AMCW lidar system and detected objects is a result of the phase difference relative to the local oscillator. In FMCW lidar systems, the transmitted signal's amplitude is held constant while the frequency is modulated. The distance between the AMCW lidar system and detected objects is a result of the phase difference relative to the local oscillator.



Thermal Controllers	
ADN8831	A high efficiency thermoelectric cooler (TEC) controller solution
ADN8833	Ultracompact, 1 A TEC driver for digital control systems
ADN8834	Ultracompact, 1.5 TEC controller
ADN8835	Ultracompact, 3 A TEC controller
Inertial Measurement Units (IMUs)	
ADIS16495-1	Tactical grade, six degrees of freedom inertial sensor
ADIS16465	Precision MEMS IMU module
ADIS16475	Precision, miniature MEMS IMU (2000 dps, 8 g)
Accelerometers	
ADXL313	3-axis, $\pm 0.5 g/\pm 1 g/\pm 2 g/\pm 4 g$ digital accelerometer
ADXL700	High precision, low g, digital triaxial accelerometer
ADXL357	Low noise, low drift, low power, 3-axis MEMS accelerometers with digital output
Gyroscopes	
ADXRS290	Ultralow noise, dual-axis MEMS gyroscope for stabilization applications



ADCs (Bi/Quad/x16)	
AD9094	8-bit, 1 GSPS, JESD204B, quad analog-to-digital converter (ADC)
HMCAD1511	High speed multimode, 8-bit, 1 GSPS ADC
HMCAD1520	High speed multimode 8-/12-/14-bit, 1000 MSPS/640 MSPS/105 MSPS ADC
AD9286	8-bit, 500 MSPS, 1.8 V ADC
Phase-Locked Loop with Integrated VCO	
ADF4360-7	Integrated synthesizer and VCO
Timing IC and Clock IC	
AD9528	JESD204B clock generator with 14 LVDS/HSTL outputs
ADCLK846	1.8 V, 6 LVDS/12 CMOS outputs low power clock fanout buffer
AD9508	1.65 GHz clock fanout buffer with output dividers and delay adjust
Optical Transimpedance Amplifiers	
LTC6560	Single-channel transimpedance amplifier with output multiplexing
LTC6561	4-channel multiplexed transimpedance amplifier with output multiplexing
High Speed Comparators (<100 ns Propagation Delay)	
ADCMP573	Ultrafast 3.3 V single-supply comparator with reduced swing PECL (RSPECL) output drivers
Precision DACs	
AD5683R	Tiny 16-bit SPI <i>nano</i> DAC <sup>™</sup> , with $\pm 2$ (16-bit) LSB INL and 2 ppm/°C reference
AD5686R	Quad, 16-bit <i>nano</i> DAC+ with 2 ppm/°C on-chip reference and SPI interface
AD5676R	Octal, 16-bit <i>nano</i> DAC+ with 2 ppm/°C reference, SPI interface
Power Regulation	
LT8331	Low $I_O$ boost/SEPIC/flyback/inverting converter with 0.5 A, 140 V switch
LT8361	Low $I_O$ boost/SEPIC/inverting converter with 2 A, 100 V switch
LT8330	Low $I_O$ boost/SEPIC/inverting converter with 1 A, 60 V switch
LT8362	Low $I_O$ boost/SEPIC/inverting converter with 2 A, 60 V switch
LT8364	Low $I_O$ boost/SEPIC/inverting converter with 4 A, 60 V switch
LT8335	Low $I_O$ boost/SEPIC/ inverting converter with 2 A, 28 V switch

In addition to the transmit and receive components listed above, ADI offers a host of companion parts that are recommended for signal processing, signal conditioning, and power needs beyond high voltage biases.

Companion Parts	
LTC4368	100 V UV/OV and reverse protection controller with bidirectional circuit breaker
LT8607	42 V, 750 mA synchronous step-down regulator with 2.5 $\mu$ A quiescent current
LTC6902	Multiphase oscillator with spread spectrum frequency modulation
LT3088	800 mA single resistor rugged linear regulator
LTC7000	Fast 150 V protected high-side NMOS static switch driver
LT3029	Dual 500 mA/500 mA low dropout, low noise, micropower linear regulator
LTC3115	40 V, 2 A synchronous buck-boost dc-to-dc converter
ADSP-BF707	Low power 400 MHz Blackfin <sup>®</sup> embedded processor with 1 MB L2 SRAM and DDR2/LPDDR interface