iScan Omega 1

ADI 5901/5904 - 24GHz Fixed Beam Antenna Module

Model Number: iScan-A-ADF5901-5904-7316-F

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COLORADO ENGINEERING, Inc.
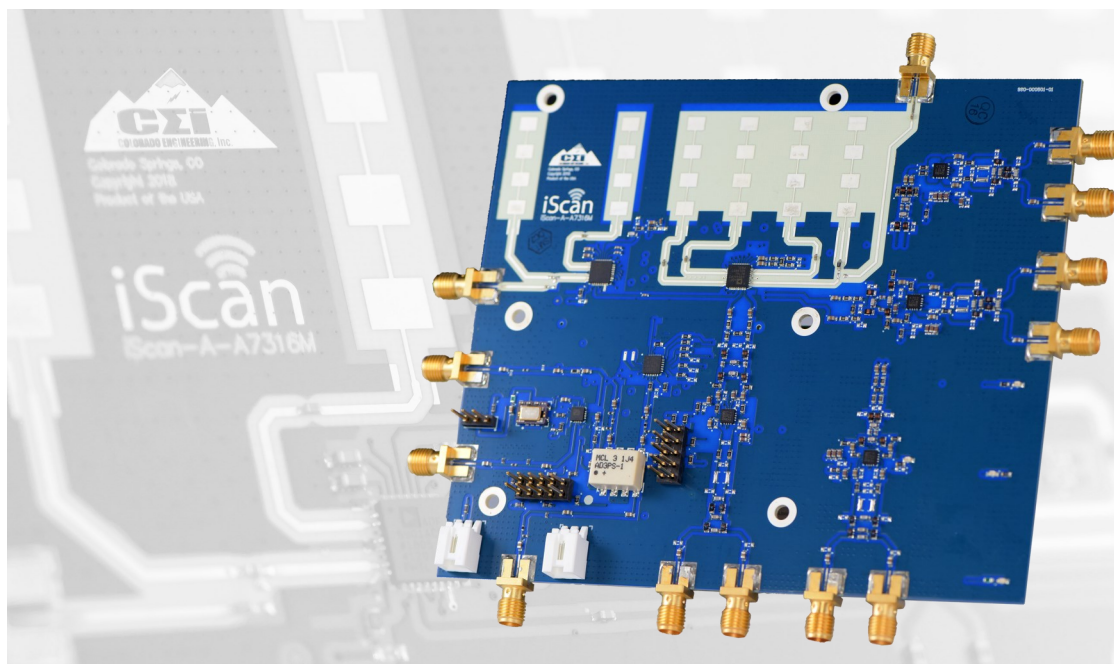
iScan RADAR SERIES

iScan OVERVIEW

CEI's iScan Radar Series brings high frequency radar technology to small form factor platforms. Utilizing a modular architecture, iScan processor, expansion, and antenna modules can be mixed and matched to create a customized development platform. The Radar Series was designed for rapid prototype development with customizable optimizations available to meet customer specific application requirements. With 24, 60, and 77GHz options to choose from the iScan Radar Series is the perfect solution that enables end users to significantly decrease cost and time-to-market!

iScan Omega 1 PRODUCT DESCRIPTION

iScan Omega 1 is our latest and greatest antenna module designed to help take your next radar design to market quickly. Equipped with Analog Devices Inc.'s ADF5901 Tx and ADF5904 Rx downconverter, iScan Omega 1 has plenty of processing power to support a plethora of advanced Digital Signal Processing (DSP) algorithms. The built-in patch antenna has a fixed beam with a FoV of ± 36.5° Azimuth and ± 8° Elevation. Other features include a reference frequency of 100MHz, reference sampling capabilities, and a PLL chip. Let iScan Omega 1 be the gateway to your next radar design!

2x Tx Antenna   4x Rx Antenna
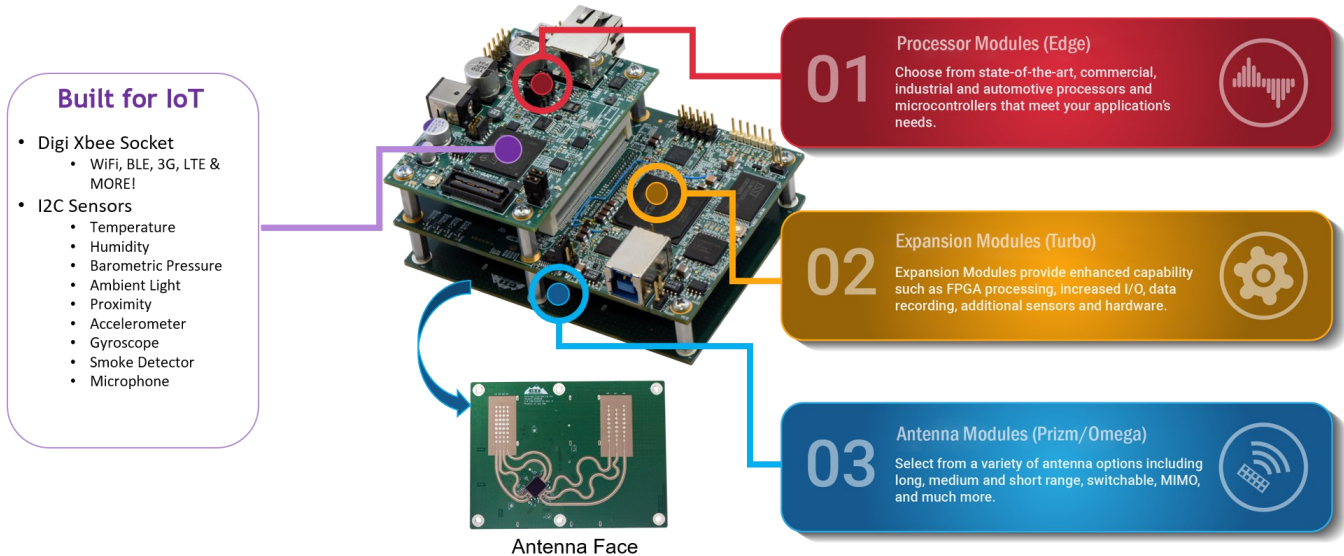
ADF5901 Tx
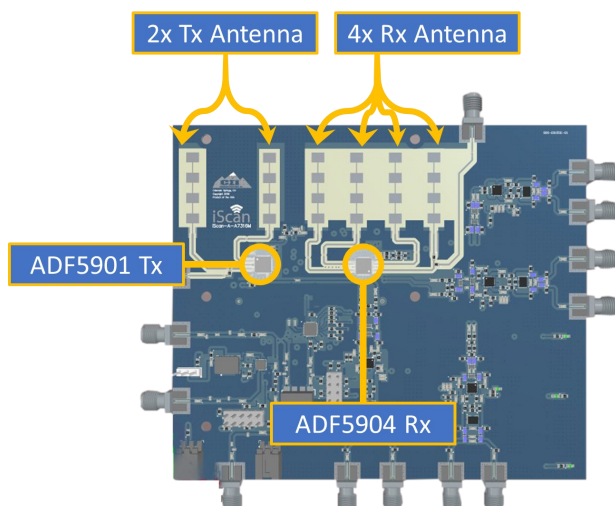
ADF5904 Rx

FEATURES

- Accurate Speed & Motion Measurements
- Fixed Beam Antenna Radar
- ADF5901 Tx: 2 Ch, 24GHz power amplifier (PA) with 8 dBm output
- ADF5904 Rx: 4 Ch, 24GHz Rx downconverter
- Reference Frequency: 100MHz via oscillator

- FoV: ± 36.5° Azimuth, ± 8° Elevation
- Dimensions: 5.25" x 4.5"
- External Reference Injection: SMA Connector
- I/O Headers
- USB to PC Interface
- Ethernet

ANALOG DEVICES

iScan MODULAR RADAR ARCHITECTURE

The iScan Radar Series makes rapid prototyping of high performance radar quick and easy. Utilizing a modular architecture, CEI's iScan processor, expansion and antenna modules can be mixed and matched to create a custom-ized development platform. Equipped with extensive capability, such as MIMO, steerable beams and digital beam forming, iScan provides superior performance for tasks such as range, speed and RCS measurements, target tracking, collision avoidance, occupancy sensing and much more. iScan Antenna Modules are available in 24, 60 and 77GHz options, making the iScan Radar Series an excellent solution for your next application.

Built for IoT

- Digi Xbee Socket
  - WiFi, BLE, 3G, LTE & MORE!
- I2C Sensors
  - Temperature
  - Humidity
  - Barometric Pressure
  - Ambient Light
  - Proximity
  - Accelerometer
  - Gyroscope
  - Smoke Detector
  - Microphone

01 Processor Modules (Edge) Choose from state-of-the-art, commercial, industrial and automotive processors and microcontrollers that meet your application's needs.

02 Expansion Modules (Turbo) Expansion Modules provide enhanced capability such as FPGA processing, increased I/O, data recording, additional sensors and hardware.

03 Antenna Modules (Prizm/Omega) Select from a variety of antenna options including long, medium and short range, switchable, MIMO, and much more.

Antenna Face

Processor Modules

Name/Model Number	Features
iScan Edge 1 iScan-P-A2G	• **Processor:** Aurix™TC39xx • **On-board Sensors:** IMU, Temperature, Humidity, Pressure, Light, Optical, Smoke Detector
iScan Edge 2 iScan-P-4700	• **Processor**: Infineon XMC4700 • **On-board Sensors:** Temperature, Humidity, Barometric Pressure, Ambient Light/Proximity, Accelerometer, Gyroscope, Smoke Detection & Microphone • **Digi Xbee Socket:** WiFi, LTE, Bluetooth
iScan Edge 3 iScan-P-S32R274	• **Processor:** NXP S32R274 • **On-board Sensors:** Temperature, IMU, Light/Proximity, Barometer, Humidity, Smoke, Microphone
iScan Edge 4 iScan-P-STM32F4	• **Processor:** ST Micro STM32F407 • **On-board Sensors:** Humidity, Barometric Pressure, Accelerometer & Gyroscope, Temperature, Smoke Detector, Ambient/Light Proximity

Expansion Modules

Name/Model Number	Features
iScan Turbo 1 iScan-E-M10	• **Processor**: Intel Max 10 FPGA • **I/O**: USB 3.0 Type-A • **Other**: 4-ch ADC
iScan Turbo 2 iScan-E-TK1 (*In Development*)	• **Processor:** NVIDIA Tegra K1 • **Features:** H.264, HDMI, 1 USB 2.0, USB 3.0, X4 PCIe Gen2, Onboard IMU and much more!

Antenna Modules

Name/Model Number	Features
iScan Prizm 1 iScan-A-RXS8160-6610-D	• **Frequency**: 77 GHz • **XCVR**: Infineon 77GHz Chipset • **FoV**: ±33° AZ, ±5° EL
iScan Prizm 2 iScan-A-TEF8102-24103610-D	• **Frequency:** 77 GHz • **XCVR:** NXP TEF 8102 FMCW • **FoV:** (7x4 Center) ±12° Az, ±5° El (7x3 Outer) ±18° Az, ±5° El
iScan Omega 1 iScan-A-ADF5901-5904-7316-F	• **Frequency:** 24 GHz • **XCVR:** ADI 5901TX / 5904RX • **FoV:** ±36.5° AZ, ±8° EL
iScan Omega 2 iScan-A-ADF5901/04-2526-D	• **Frequency:** 24 GHz • **XCVR:** ADI 5901TX / 5904RX • **FoV:** ±12.6° AZ, ±13° EL

iScan Development Kits

Name/Model Number	Configurations
iScan Phantom iScan-K-RXS8160-A2G	• **Processor Module - iScan Edge 1:** Infineon Aurix™TC39xx microcontroller • **Antenna Module - iScan Prizm 1:** Infineon 77 GHz MMIC RXS8160
iScan Phantom *with Turbo 1 Expansion Module* iScan-K-RXS8160-A2G-M10	• **Processor Module - iScan Edge 1:** Infineon Aurix™TC39xx microcontroller • **Antenna Module - iScan Prizm 1:** Infineon 77 GHz MMIC RXS8160 • **Expansion Module (optional) - iScan Turbo 1:** Intel Max 10 FPGA
iScan Panther *with Turbo 1 Expansion Module* iScan-K-ADF5901/04-STM32F4-M10	• **Processor Module - iScan Edge 4:** NXP S32R274 microcontroller • **Antenna/XCVR Module - iScan Omega 2:** ADI 24 GHz 5901TX / 5904RX • **Expansion Module- iScan Turbo 1:** Intel Max 10 FPGA