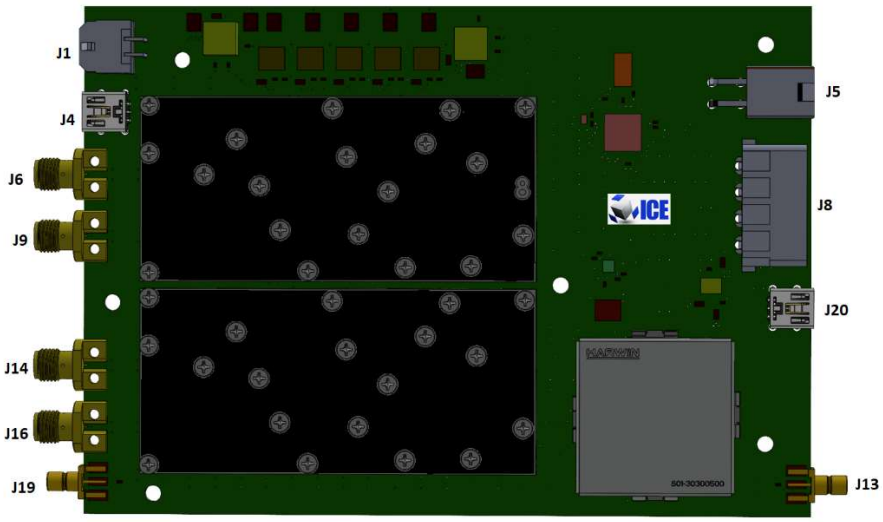
ICE-AR18

18 GHz Wideband Receiver Tuner



ICE-AR18 is a single (AR18S) or dual (AR18D) channel receiver tuner module that provides high dynamic range coverage from 0.9 GHz to 18 GHz. The tuner also provides a bypass path from 10 MHz to 6 GHz for direct spectrum capture. The analog IF output frequency is centered at 2.0 GHz with a 1.0 GHz bandwidth. Multiple tuner sets can be configured to work together for coherent operation and two-channel applications. ICE-AR18 in combination with ICE-A2DM20 analog to digital converter, allows tunable system bandwidth of 1.0 GHz. ICE-AR18 is designed modularly to be used in a variety of ICE systems including ICE-Tray, ICE-Block, ICE servers or as a standalone tuner.

Features

- 0.9 GHz to 18 GHz frequency range
- 10 MHz to 6 GHz tuner bypass path
- 1.0 GHz instantaneous bandwidth
- 2.0 GHz IF output frequency – compatible with A2DM20 input
- Optional 500 MHz bandwidth with 1.0 GHz IF center (Operating Range 0.4 GHz to 18 GHz)
- Sub-Octave preselection filtering
- Selectable reference clock, external or internal 10 MHz
- Integrated temperature sensors
- Small dimensions: 5.54” x 3.87” (14.0 x 9.8 cm)

Applications

- Multichannel, multimode receivers
- High performance, very wideband digital down conversion (DDC)
- Wideband microwave, wideband radar
- Base station CDMA, GSM, WCDMA testing
- Direct digital receivers
- Base station infrastructure
- Communications instrumentation
- Radar, infrared imaging
- Instrumentation, test and measurement

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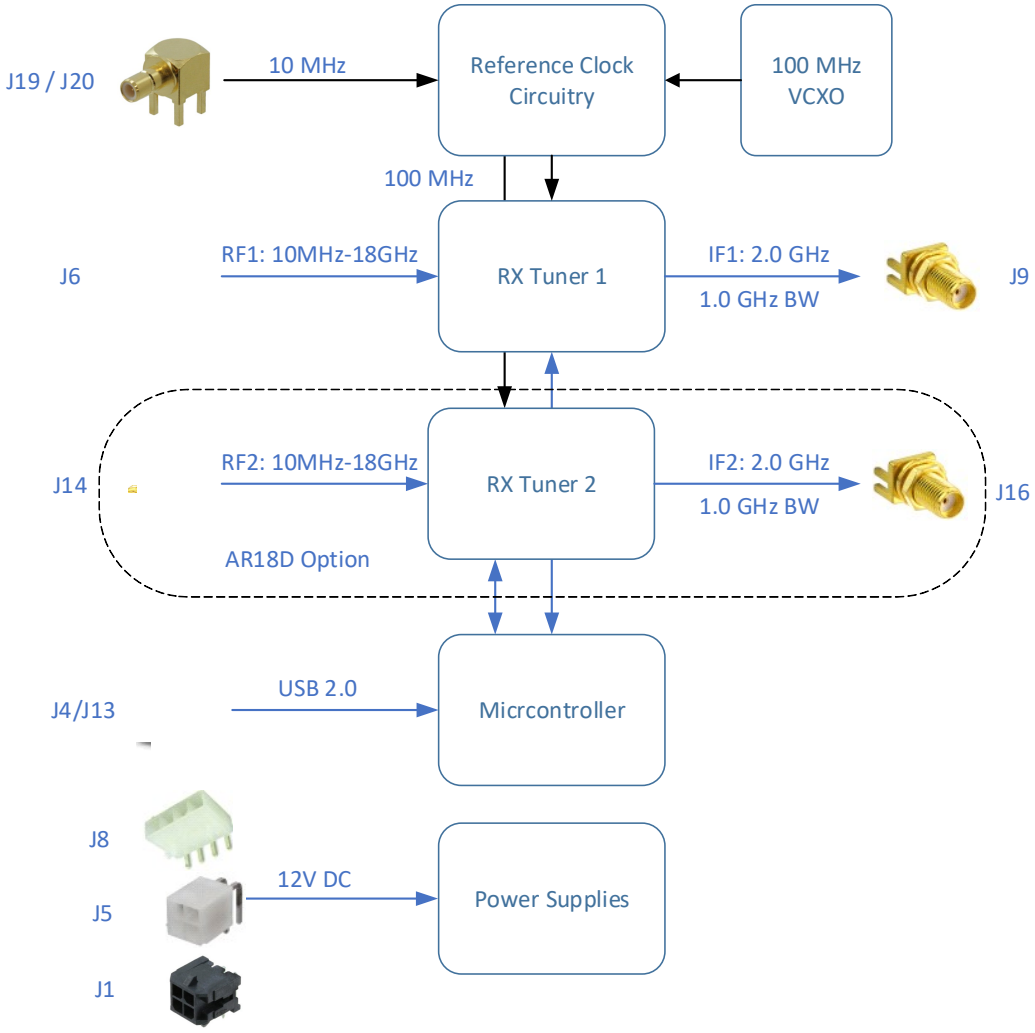
Block Diagram



Connectors

Front	Rear	Type	Part Number	Description	Function
J19	J20	SMB	903-518J-51P	Edge Launch SMB	10 MHz Reference
J6		SMA	HRM(G)-300-467B-1	Edge Launch SMA Jack	RF1 Input
J14		SMA	HRM(G)-300-467B-1	Edge Launch SMA Jack	RF2 Input (AR18D)
J4	J13	USB Mini B	565790519	Right Angle Mini B	Microcontroller
J1		Micro Fit 3.0	43045-0401	Micro Fit 3.0 Right Angle	Power
	J8	4-pin Power	641737-1	Shrouded 4-pin R/A	Power
	J5	Mini Fit Jr	26013115	4-pin Right Angle	Power
J9		SMA	HRM(G)-300-467B-1	Edge Launch SMA Jack	IF1 Output
J16		SMA	HRM(G)-300-467B-1	Edge Launch SMA Jack	IF2 Output (AR18D)

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System Connectivity

ICE-AR18 is modular (5.54” x 3.87”) and has mounting holes that allow mounting in various ways including:

- On a single slot ICE PCIe Carrier card plugged into a server
- Mounted on a Tuner tray embedded in an ICE-Tray or ICE-Block appliance
- Used standalone as a single or dual tuner

RF and IF connections are SMA connectors, while the 10 MHz external reference clock uses SMB connectors. There are two connection options (J19 / J20) for the SMB connector allowing for differing system cabling.

AR18 is powered by 12 VDC and can be powered from three different connectors, depending on system cabling. Pinouts for the three connectors shown below:

Four-Pin TE 641737-1 Connector (J8) Pinout

Pin	Signal	Notes
1	12 VDC	
2	GND	
3	GND	
4	N/C	

Four-Pin Molex Mini Fit Jr. Connector (J5) Pinout

Pin	Signal	Notes
1	12 VDC	Pins 1 and 2 facing latch
2	12 VDC	
3	GND	
4	GND	

Four-Pin Molex Micro Fit 3.0 Connector (J1) Pinout

Pin	Signal	Notes
1	12 VDC	Pins 1 and 2 facing latch
2	12 VDC	
3	GND	
4	GND	

AR18 is controlled through a USB mini-B connector. Host software can control and monitor the following:

- Select center frequency
- Tuner selection
- RF attenuation
- IF attenuation
- Channel synchronization
- Reference clock selection
- Monitor tuner status

Two USB mini-B connectors (J4 and J13) are provided to ease system cabling.

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RF Performance

Parameter	Notes	Min	Typ	Max
Frequency Range		0.9 GHz		18 GHz
Frequency Range	Bypass Path	10 MHz		6 GHz
Instantaneous Bandwidth			1.0 GHz	
IF Center Frequency			2.0 GHz	
Tune Frequency Range		1.4 GHz		17.5 GHz
Tuning Step Size			5 MHz	
Frequency Reference (Software Selectable)	10 MHz external		10 MHz, 0 dBm	
Input Limiter P1dB			+14 dBm	
Input Limiter Recovery Time			10 pS	
Input IP3			+5 dBm	
Input IP2			+60 dBm	
Noise Figure			14 dB	
Image Rejection		70 dB	80 dB	
Gain			24 dB	
Gain Control (1 dB steps)			45 dB	
Tuning Speed			100 uS	450 uS
Phase Noise	1 kHz offset		-90 dBc/Hz	
	10 kHz offset		-100 dBc/Hz	
	100 kHz offset		-100 dBc/Hz	
	1 MHz offset		-106 dBc/Hz	
	10 MHz offset		-127 dBc/Hz	

Ordering Information

ICE-AR18S	Single Receiver Tuner (18 GHz)
ICE-AR18D	Dual Receiver Tuner (18 GHz)

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