

# Servo Controller

Model No. ICE-SC1

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Please read [Limited Warranty](#) and [General Warnings and Cautions](#) prior to operating the ICE-SC1.

## Description

General purpose Servo Controller with  $P^2D$  loop filter. Secondary auxiliary output is pure integrator of primary output. Both primary output and aux output have min / max settings and adjustable offset. This product is currently in development and all specifications subject to change.

## Absolute Maximum Ratings

Note: All modules designed to be operated in laboratory environment

Parameter	Rating
Environmental Temperature	>15°C and <30°C
Environmental Humidity	<60%
Environmental Dew Points	<15°C

## Specifications

	ICE-SC1	Units
<b>Peak Lock Servo</b>		
<html> &nbsp;&nbsp;  </html>Bandwidth <sup>1)</sup>	1	MHz
<html> &nbsp;&nbsp;  </html>Input Impedance	50	Ω
<html> &nbsp;&nbsp;  </html>Dither Frequency <sup>2)</sup>	4	MHz
<html> &nbsp;&nbsp;  </html>Phase Shift Resolution <sup>3)</sup>	5.6	deg
<html> &nbsp;&nbsp;  </html>Input Voltage Noise <sup>4)</sup>	TBD	nV/ <HTML> √Hz </HTML>
<b>Loop Filter Parameters</b>		
<html> &nbsp;&nbsp;  </html>Proportional Gain (ref to DC Error)	-38 to +30	dB

	ICE-SC1	Units		
Peak Lock Servo				
<html> &nbsp;&nbsp;&nbsp;</html>Proportional Gain Resolution	2	dB		
<html> &nbsp;&nbsp;&nbsp;</html>First Integrator	0.030 - 175	kHz		
<html> &nbsp;&nbsp;&nbsp;</html>Second Integrator	0.30 - 1,750	kHz		
<html> &nbsp;&nbsp;&nbsp;</html>Differential	0.1 - 10,000	kHz		
<html> &nbsp;&nbsp;&nbsp;</html>Differential Gain	18	dB		
Electrical Specifications				
	Min	Typical	Max	Units
5V_A Current Draw		N/A		A
5V_D Current Draw		70		mA
+15V Current Draw <sup>5)</sup> (Sidelock)		160	200	mA
-15V Current Draw <sup>6)</sup> (Sidelock)		120	150	mA

## I/O (ICE-BOX)



Only when purchased with the ICE-Box.

The Front Panel for the ICE-SC1 has three SMA connectors. Top: Error In; Middle: Aux Out; Bottom: Primary Out.

### Error In

SMA input for the error signal.

### Aux Out

SMA output for the Auxiliary servo.

### Servo Out

SMA output for the Primary servo.

<sup>1)</sup> Calculated based on RF dither frequency of 4 MHz which limits servo bandwidth

<sup>2)</sup> <sup>3)</sup> ,  
<sup>Not currently implemented as of November, 2017</sup>

<sup>4)</sup> Referenced to 50Ω load

<sup>5)</sup> <sup>6)</sup> ,  
Current draw depends on output load, assuming high impedance. Current may be initially high on power-on

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