

## GPS Timing Reference Module

### Features

- Phase-locked 10MHz Output
- Precision 1PPS output
- SMA connector for GPS antenna input, 10MHz clock
- SMB connector for 1PPS, IRIG-B outputs
- Single-site module for use with ICE-PIC8 cards



Figure 1: ICE-GPS Rev 3.1

### Applications

- Precision time and frequency reference

### Product Description

The ICE-GPS is a GPS-driven, mixed-signal phase-lock loop, providing a 1 PPS output, an IRIG-B output, and generating a 10MHz sine output from an extremely low jitter voltage-controlled crystal oscillator (VCXO). The 10MHz output is disciplined from an onboard GPS receiver, which drives the long-term frequency stability. The onboard GPS receiver at the core of the ICE-GPS is the Conner Winfield CW25 timing receiver.

### Specifications

#### Input/Output Specifications

Parameter	Minimum	Typical	Maximum	Units
Analog Input Impedance		50		Ohms
10MHz Clock Output	0.5	1.0	1.0	V <sub>p-p</sub>
1PPS Output	0	1.0	3.3	V
IRIG-B Output	0	1.0	3.3	V
Output Impedance	12.5	50		Ohms



## Absolute Maximum Ratings

Parameter	Value	Units	Conditions
<b>Electrical</b>			
AVcc	5.0	VDC	
DVcc	3.3	VDC	
Analog input power	+10	dBm	50 ohm
Clock Output	0 to 5	V <sub>peak</sub>	50 ohm
PPS Output	0 to 5	V <sub>peak</sub>	50 ohm
IRIG-B Output	0 to 5	V <sub>peak</sub>	50 ohm
<b>Environmental</b>			
Operating Temp	-10 to +65	Degrees C	
Storage Temp	-40 to +85	Degrees C	

Warning: Operation of this module beyond any of these parameters (temperature, voltage, and input power) may cause permanent damage. Exposure to absolute maximum ratings for extended periods may affect module reliability. Operation of the module beyond these specified parameters voids the factory warranty

## Connectors

Connector	Manufacturer	Part Number	Description	J-Number
Signal Connections				
GPS Antenna In	Cinch	142-0701-501	Edge Mount SMA Connector	J3
Clock Out	Cinch	142-0701-501	Edge Mount SMA Connector	J5
PPS Out	Cinch	131-1701-371	Edge Mount SMB Connector	J6
IRIG-B Out	Cinch	131-1701-371	Edge Mount SMB Connector	J7
Board Connection				
Data Connection	Samtec	QTE-020-03-F-D-A	40 Pin Connector	J4
Power Connection	3M	929852-01-05-RA	Standard 10-pin Header	J2
Physical Connection				
Standoff (2 each)			Physical Connection	

## ICE Interface Cables

ICE-CAB-SMB5 (for J5, J6, J7) 5 ft. BNC to SMB cable

ICE-CAB-SMA5 (for J3) 5 ft. BNC to SMA cable

## Connectors Diagram

Note the connectors on the image below, in order from top to bottom: GPS antenna in, CLK out, PPS out, IRIG-B out.

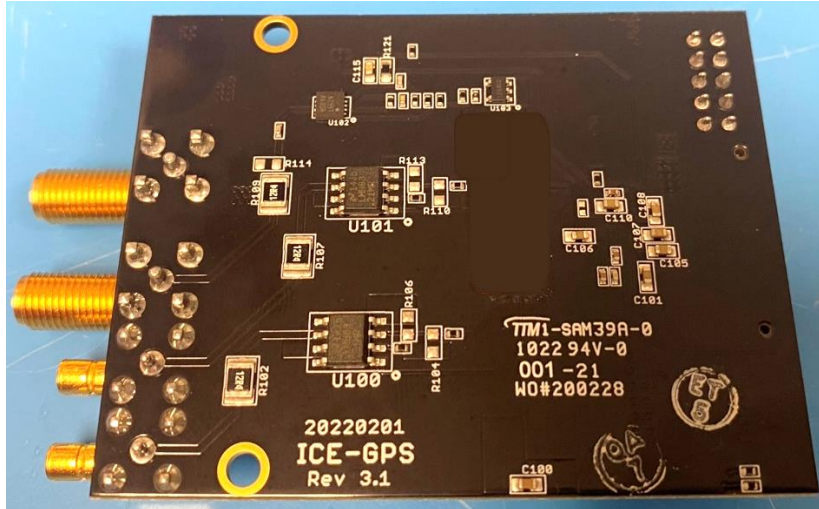


Figure 2: ICE-GPS Rev 3.1

## Revisions

Revision No.	Date	Description
1.0	3/18/24	Initial Document