

# ALLEN TELESCOPE ARRAY

## INTERFACE DOCUMENT

19.10.2020

VERSION:1.2

### LOCATION

<b>Name</b>	Hat Creek Radio Observatory
<b>Address</b>	42231 Bidwell RD, Hat Creek, CA 96040
<b>Altitude</b>	1008 m
<b>Latitude</b>	40° 49' 03" N
<b>Longitude</b>	121° 28' 24" W

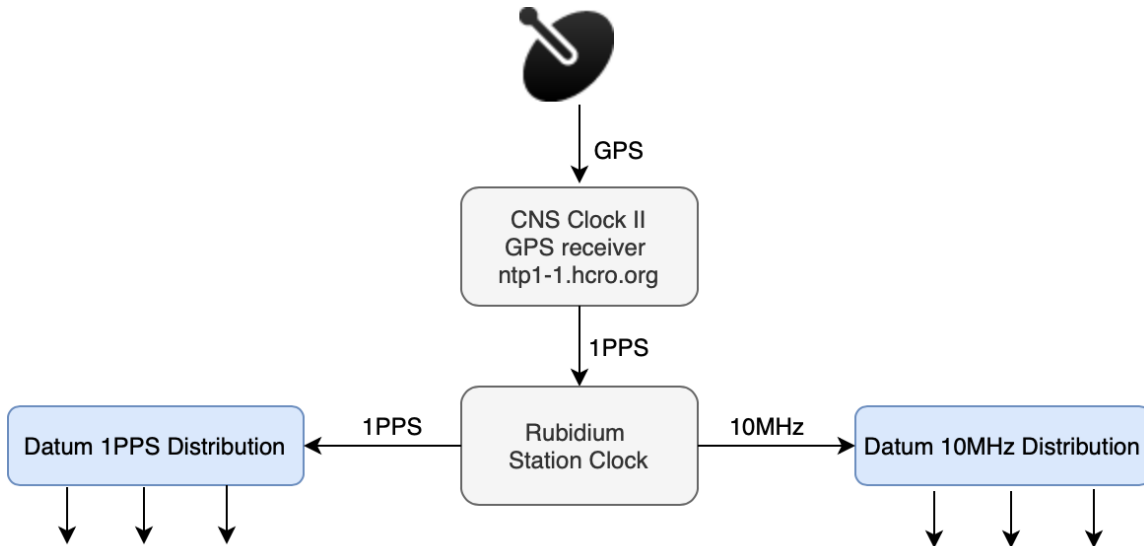


### ANTENNAS

<b>Architecture</b>	42 dishes – 6.1 m offset Gregorian
<b>Array maximum baseline</b>	300 m
<b>Elevation range</b>	16 to 87 deg
<b>Max elevation speed</b>	1 deg/sec
<b>Azimuth range</b>	-90 to 450 deg
<b>Max azimuth speed</b>	3 deg/sec
<b>Operating frequency</b>	1 – 11.2 GHz
<b>Feed design</b>	Log-periodic
<b>Polarization</b>	Dual linear
<b>Feed operating temperature</b>	80 Kelvin
<b>System temperature (<math>T_{sys}</math>)</b>	45 Kelvin @ 2 GHz; 60 Kelvin @ 8 GHz
<b>HPBW</b>	3.5° @ 1 GHz; 0.58° @ 6 GHz; 20.9' @ 10 GHz;

## TIME STANDARD

<b>Time sync</b>	GPS (CNS Clock II)
<b>Station clock</b>	Rubidium
<b>Available reference signals</b>	10MHz; 1PPS
<b>Local NTP server</b>	ntp1-1.hcro.org; ntp2-1.hcro.org; ntp2-2.hcro.org

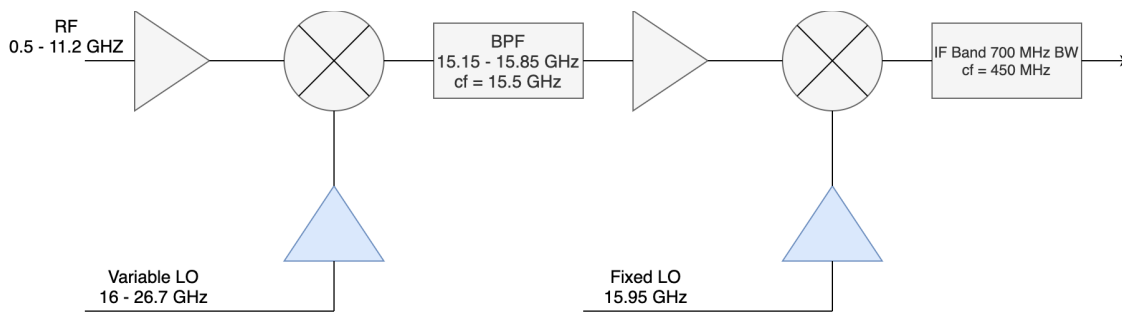


## RADIO FREQUENCY (RF)

<b>Cryogenic low noise amplifier</b>	LNF-ABLNC1_15A; 35dB gain; 1 – 15 GHz
<b>Post amplifier module (PAM)</b>	60dB gain; 0 - 63 dB variable attenuator; 0.5 dB step
<b>PAM 1 dB gain compression</b>	+8 dBm
<b>Analog fiberoptic link converter</b>	Photonic Systems; PSI 1601
<b>Fiber link noise figure</b>	≤ 45 dB
<b>Fiberoptic 1 dB gain compression</b>	+11 dBm
<b>Fiberoptic connectors</b>	FC/APC
<b>Optical wavelength</b>	1550 nm

## INTERMEDIATE FREQUENCY (IF)

<b>Number of independent IF bands</b>	4
<b>IF bandwidth</b>	700 MHz
<b>Number of tunable LO</b>	4
<b>Number of fixed LO</b>	1
<b>Frequency range of tunable LO</b>	16 – 26.7 GHz
<b>Frequency of fixed LO</b>	16.012 GHz
<b>AAF center frequency</b>	512 MHz
<b>IF output power range</b>	-10 dBm to -30 dBm
<b>IF output connector</b>	SMA



## CONTROL INTERFACE

Telescope control software	Python 3.5 based library; ATATools.ata_control
GitHub location	<a href="https://github.com/SETIatHCRO/ATA-Utills">https://github.com/SETIatHCRO/ATA-Utills</a>
Software version	1.0.3
Requirements	'ephem'; 'astropy'; 'numpy'; 'ftptpy'; 'pyuvdata'

## NETWORK

Internet connection	100 Mbps full duplex
Site access	VPN; SSH
Available public IPs	64
VPN address	<a href="https://vpn.hcro.seti.org">https://vpn.hcro.seti.org</a>

