

# Radeus 8200 Series Antenna Controller



# Earth Station 11m Antenna



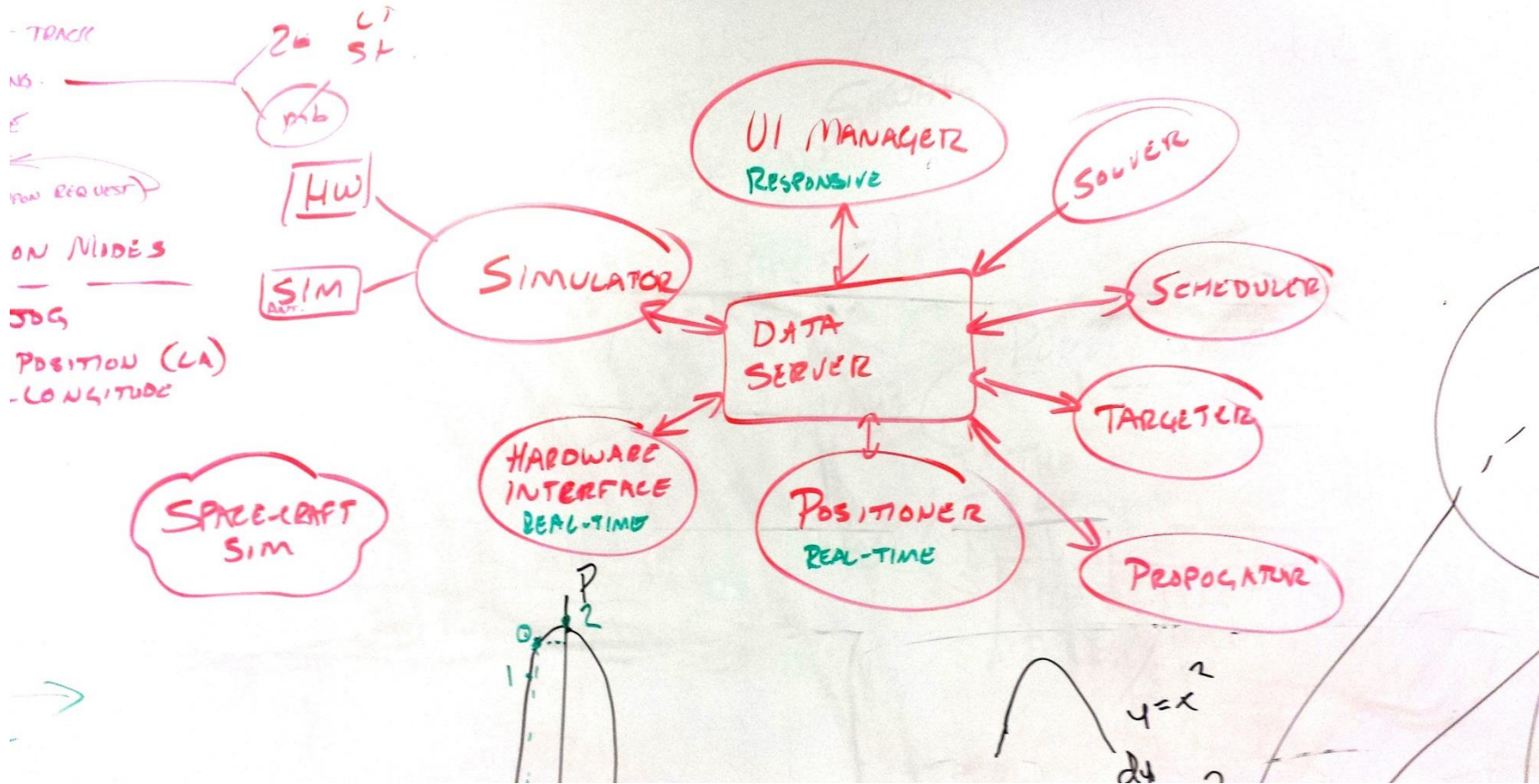
# Ancient History



- Vertex (now General Dynamics) Model 7200
- Developed in the early 1990s
- Simple keypad/display UI

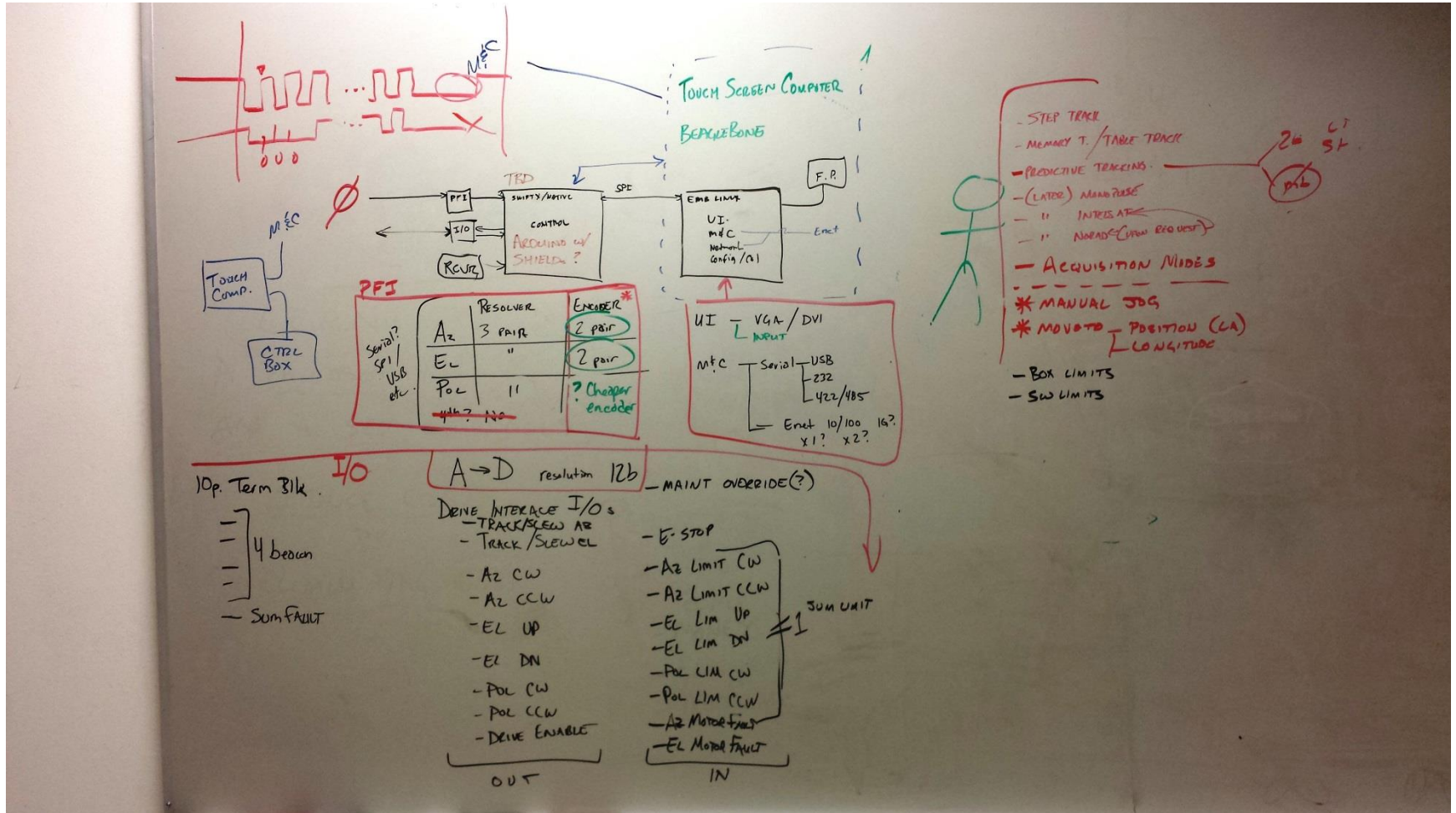


# January 2015

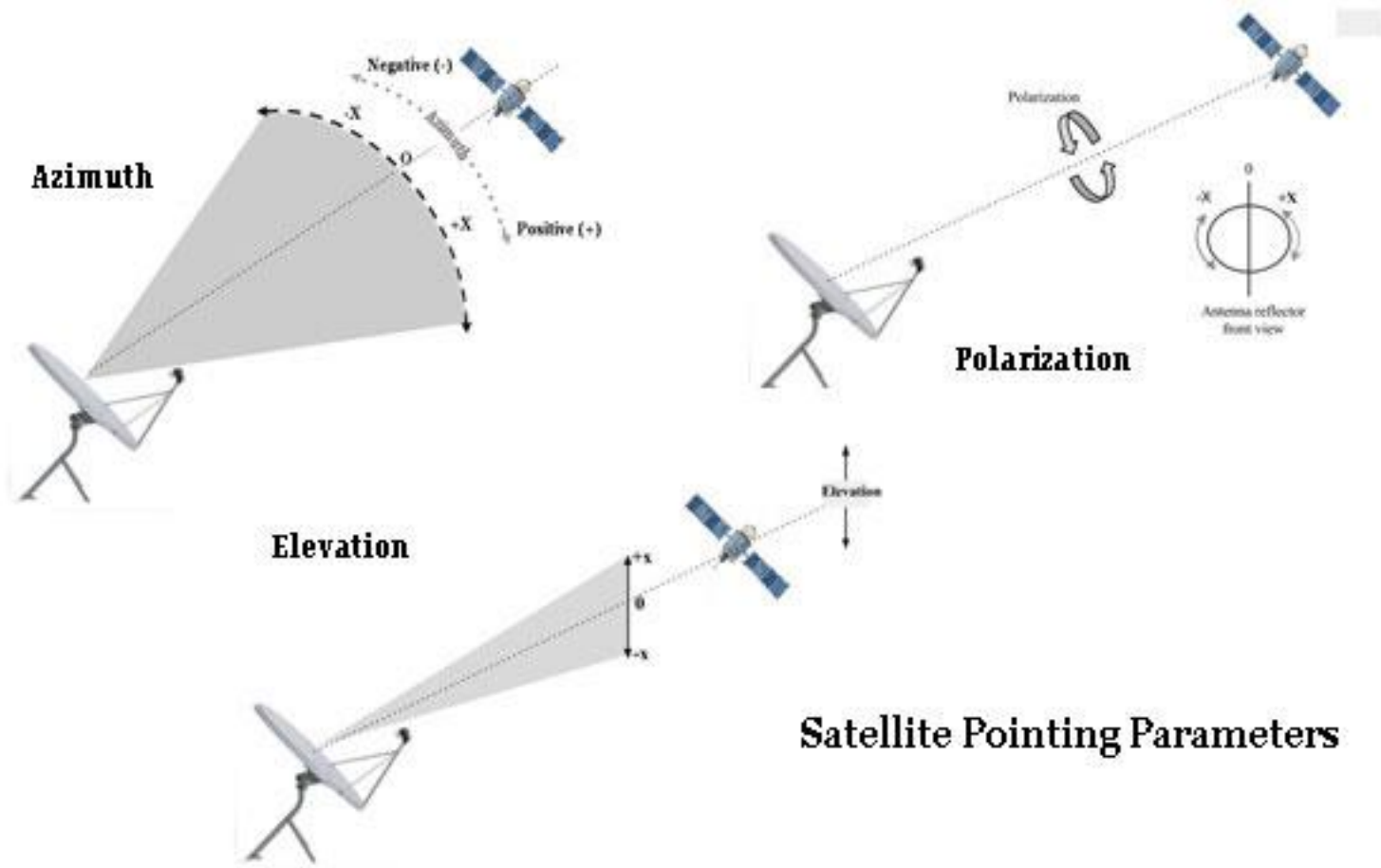




# January 2015



# Antenna Axes

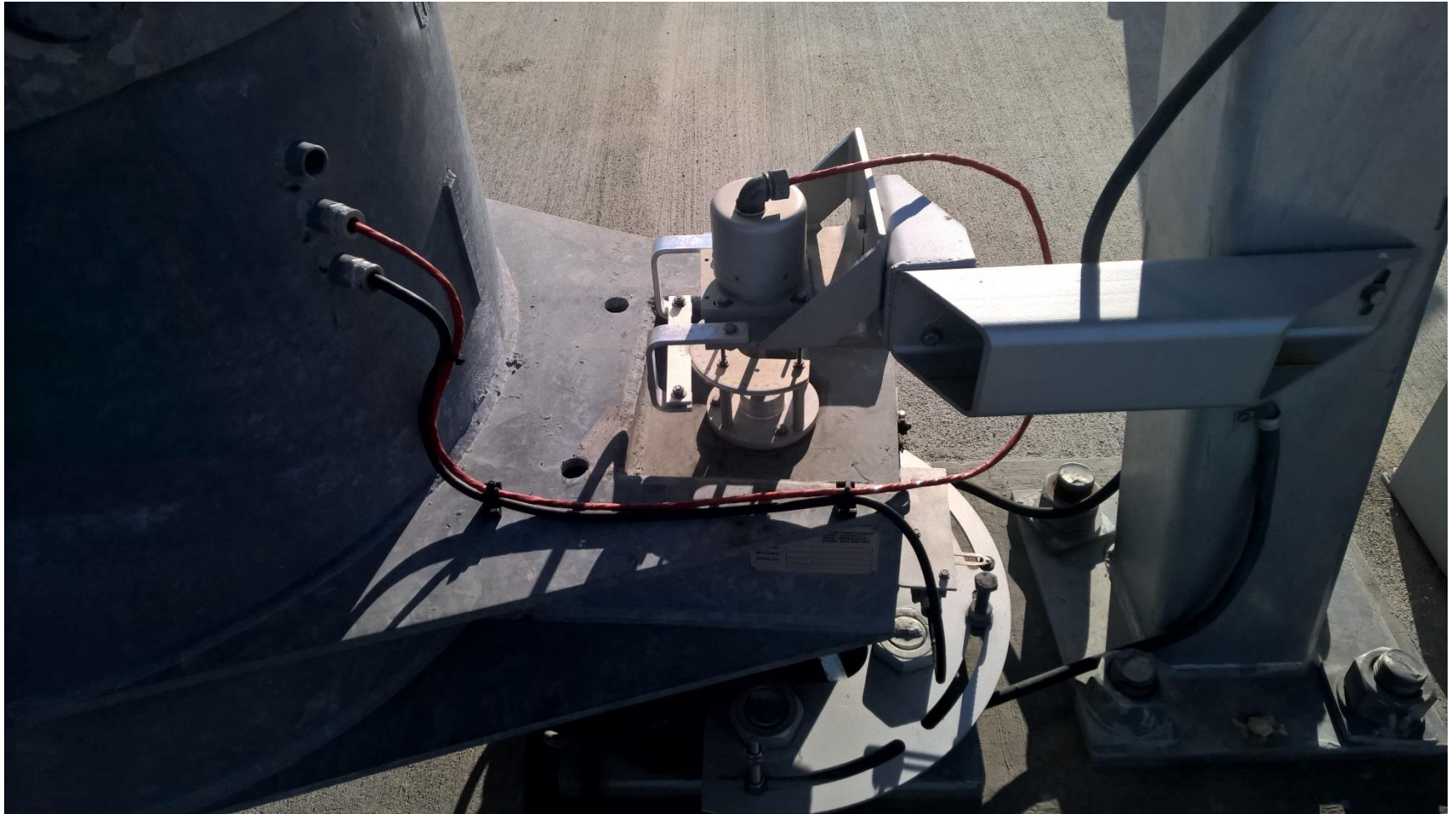


# Inputs

- Azimuth Position Transducer
- Elevation Position Transducer
  - Resolver ( $0.01^\circ$ ), Optical encoder ( $0.001^\circ$ )
- Polarization Transducer
  - Resolver or optical ( $0.1^\circ$ )
- Limit Switches (Both ends of each axis)
- Beacon receiver (power level in dBm)

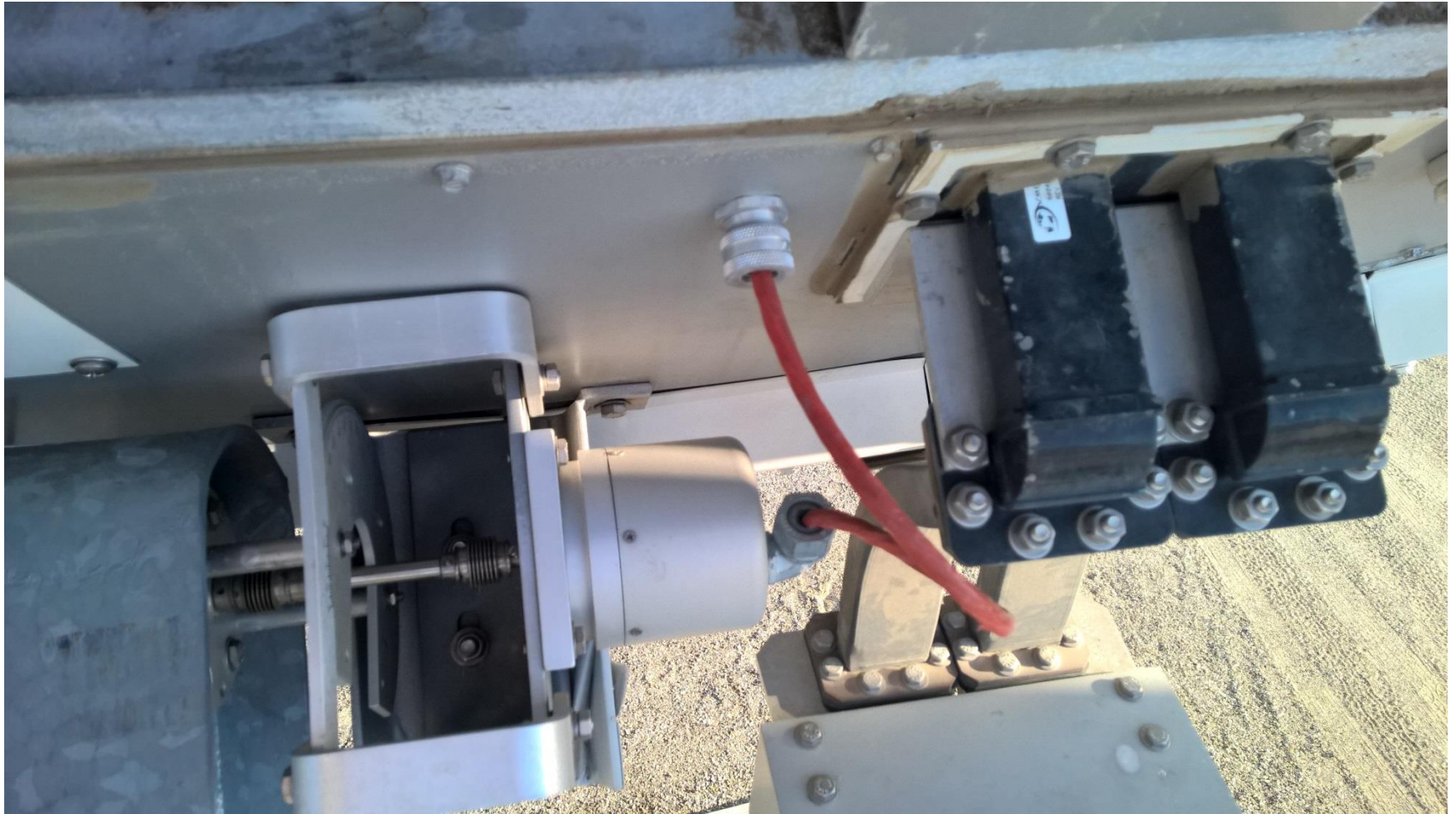


# Azimuth Position Transducer





# Elevation Position Transducer



# Azimuth Limit Switch



# Outputs

- Azimuth Motor Controls
  - On/off, Speed (slew/track), Direction (CCW/CW)
- Elevation Motor Controls
  - On/off, Speed (slew/track), Direction (Down/Up)
- Polarization Motor Controls
  - On/off, Direction (CCW/CW)
- Alarm (actually “no alarm”)





# Motor Controllers





# Three Computers

- Transducer Interface (Encoders/Resolvers)
  - Cortex-M4, SwiftX-ARM
- Controller (positioner, fault detection)
  - Cortex-M4, SwiftX-ARM
- UI (touch-panel PC)
  - 10.2" Panel PC, Windows 7 Embedded,
  - SwiftForth, SWOOP



# User Interface



# Touch-Panel PC



# Rear Panel (Inside Chassis)





# Standby

09:48:02 02-Oct-2015 UTC  
RADEUS LABS 11M LM

	azimuth	elevation	polarization	receiver
actual	170.00°	40.00°	18.5°	--

Standby

Standby

Target

Manual

Setup

Fault



# Select Target

09:49:00 02-Oct-2015 UTC

RADEUS LABS 11M LM

	azimuth	elevation	polarization	receiver
actual	170.00°	40.00°	18.5°	--

Standby

**Target**  
OPTIONS

Select target

Defaults  
Immediate  
AMC-2  
AMC-9  
ECHOSTAR 1  
EUTELSAT 115W A  
GALAXY 23  
SES-2

Track

Edit

Delete

New

Home



# Acquire Target

**AMC-2** 09:49:43 02-Oct-2015 UTC  
RADEUS LABS 11M LM

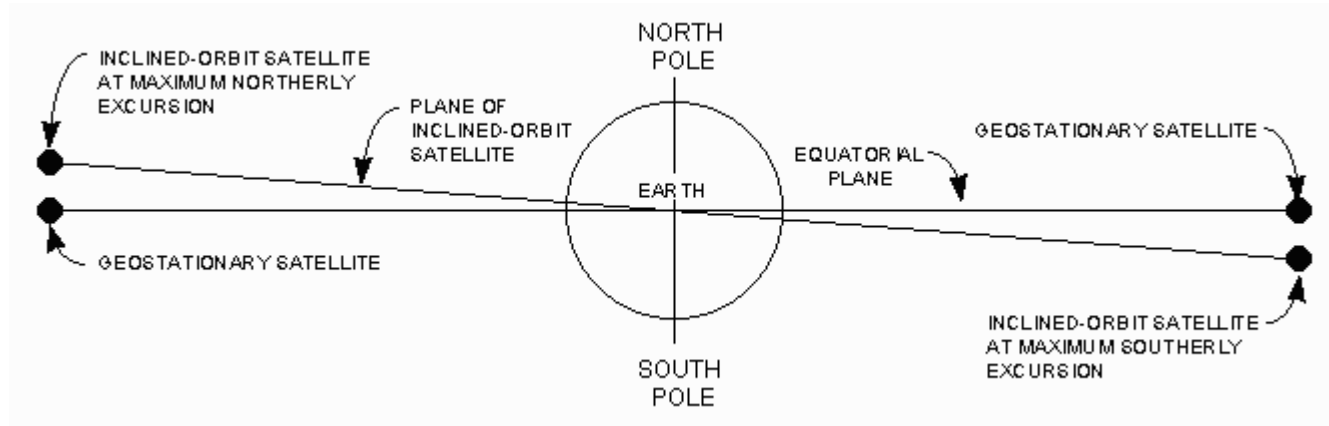
	azimuth	elevation	polarization	receiver
actual	132.68°	23.59°	42.5°	--
target	132.68°	23.60°	42.5°	
$\Delta$	0.00°	-0.01°	0.0°	

Acquiring target

Standby Target Manual Setup Fault

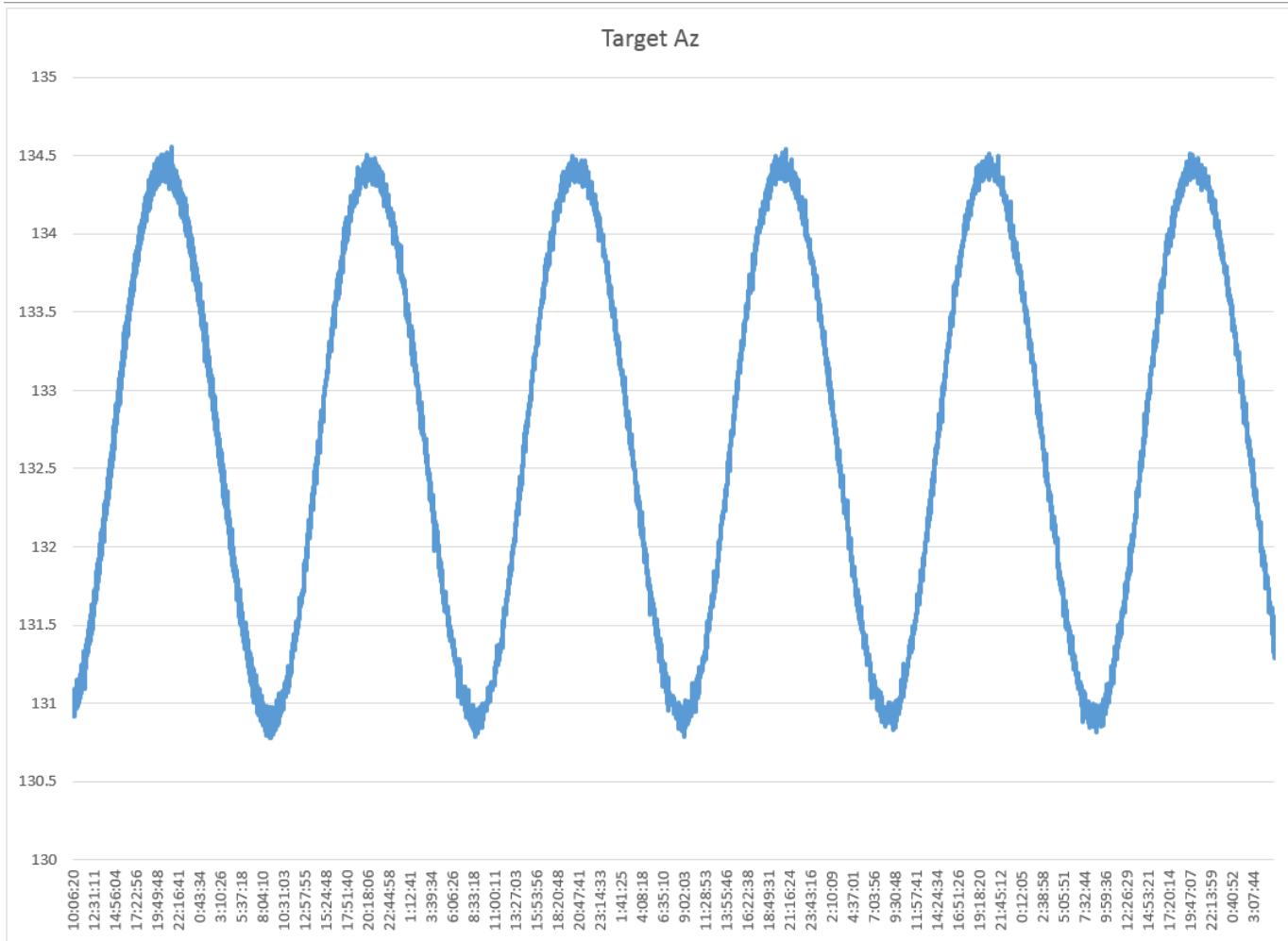


# Inclined Orbit





# Log Data



# Test Site

