XPress – Integrated Data Collection Platform Training

Microcom Environmental

GOES DCS Training Day

September 28, 2019

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The XPress

- Fully integrated GOES DCS Data Collection Platform
  - GTX-2.0 Satellite Data Transmitter & Logger
  - UB6 Satellite Transmit Antenna
  - 5 Watt Solar Panel
  - GPS Antenna
  - Internal Battery Pack
  - Solar Regulator
- Lightweight
- IP66 Enclosure
- Mounting & Solar Panel options available
- Extremely cost-effective

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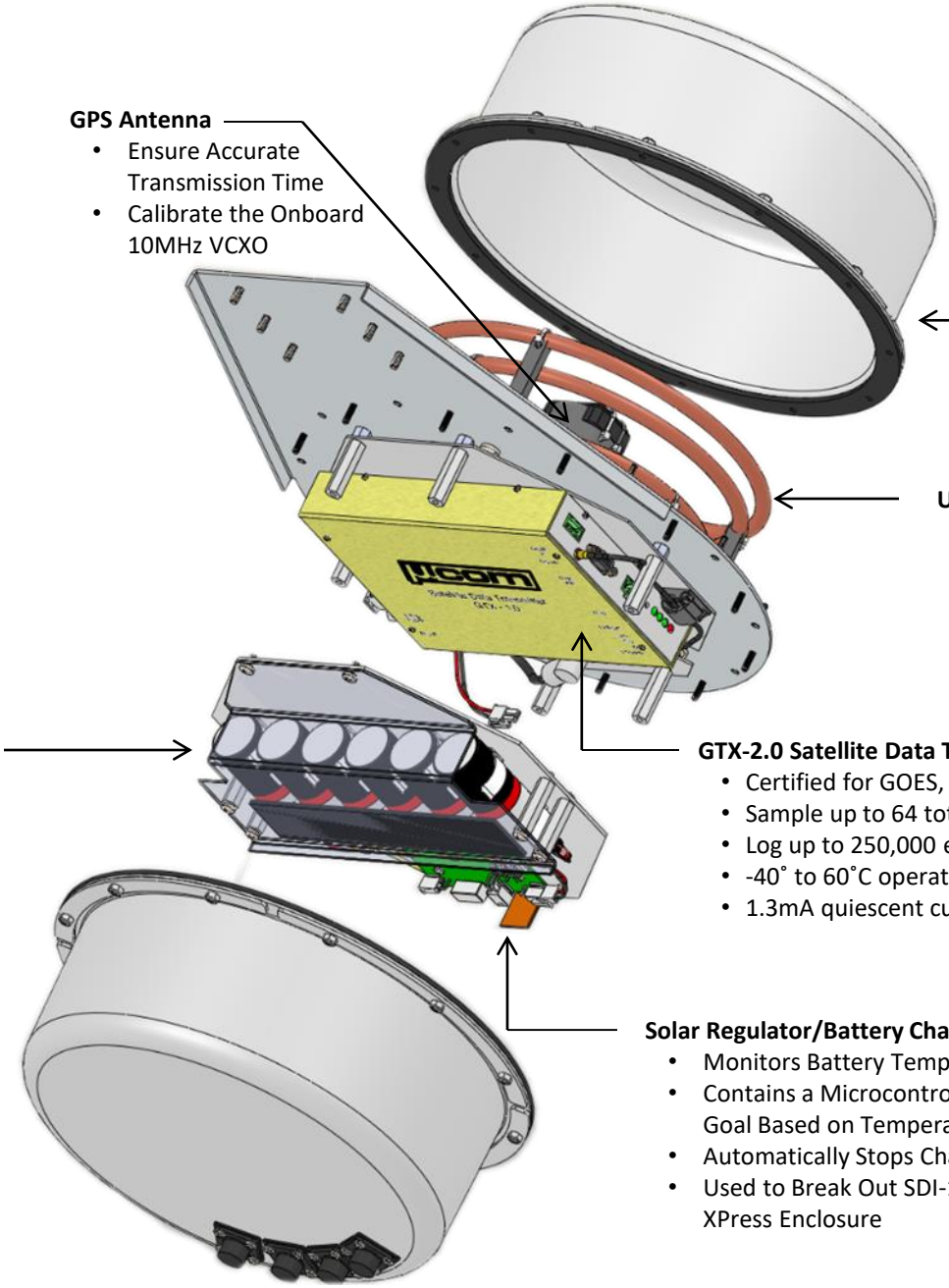

GPS Antenna
- Ensure Accurate Transmission Time
- Calibrate the Onboard 10MHz VCXO

UV Resistant ABS Plastic Shell
- Neoprene Gasket Seal
- IP66

UB6 Transmit Antenna
- 6 dB Gain
- 3 dB Beam Width of 78°
- Right hand circular polarized
- Transmits Data at 402MHz

12V 4.5aH Battery Pack
- Absorbed Glass Mat Construction

GTX-2.0 Satellite Data Transmitter & Logger
- Certified for GOES, EUMETSAT, INSAT, and Himawari
- Sample up to 64 total sensors parameters
- Log up to 250,000 entries
- -40˚ to 60˚C operating temperature
- 1.3mA quiescent current

Solar Regulator/Battery Charger
- Monitors Battery Temperature
- Contains a Microcontroller that Calculates the Charge Goal Based on Temperature
- Automatically Stops Charging When Goal is Reached
- Used to Break Out SDI-12 Connection from GTX 2.0 to XPress Enclosure

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Configuring the XPress

- The XPress has 4 external connectors
  - Solar Power, RS-232, & 2 SDI-12/Tipping Bucket connectors
- The XPress can be configured using the provided RS-232 cable and GTX Utility software
  - The GTX Utility is provided with all units and can be downloaded on the GTX webpage
  - Tutorials on using the GTX Utility can be found on Microcom Environmental's YouTube Page

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Power Consumption Budget

- It is important to calculate the power consumption budget for your selected sensor array.
- Calculate power consumption per hour for the following:
  - GTX Data Collection
  - GTX Transmission
  - GTX Quiescent
  - Sensor Data Collection
  - Sensor Quiescent
- Then divide the combined hourly consumption by the XPress's 4500mA-Hr Battery Capacity

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Power Consumption Budget

- XPress Battery Capacity - 4.5 Ampere-Hour (4500 mA-Hr)
- GTX Data Collection – 15 mA
  - Every 10 minutes lasting 60 seconds (360 sec/hour = 10%)
  - 1.5 mA-Hr
- GTX Transmission – 3000 mA
  - Every Hour lasting 3.6 Seconds (0.1%)
  - 3 mA-Hr
- GTX Quiescent – 1.3 mA
  - Remaining hour (89.9%)
  - 1.17 mA-Hr
- Sensor Data Collection – 20 mA
  - Every 10 minutes lasting 60 seconds (360 sec/hour = 10%)
  - 2 mA-Hr
- Sensor Quiescent – 0.1mA
  - Remaining Hour (90%)
  - 0.09 mA-Hr
- 1.5+3+1.17+2+0.09 = 7.76 mA-Hr
- 4500 mA-Hr / 7.76 mA-Hr = **580 Hr (24 Days)**

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SDI-12 Interfaces

- The XPress utilizes SDI-12, but Microcom offers SDI-12 interfaces for all other common sensor data communications protocols
- All SDI-12 Interfaces can be packaged in NEMA IP66 enclosures
- Microcom also offers the XTend, an additional sensors breakout interface

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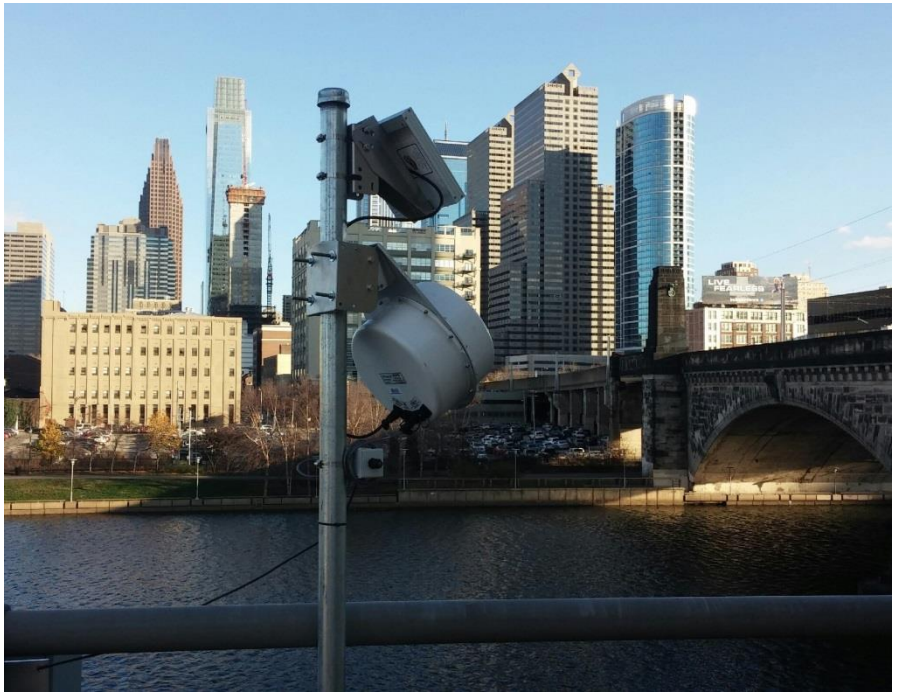
Mounting

- Stainless Steel U bolt (1 – 3.5” diameter poles)
- Stainless Steel V bolt (1 – 3.5” diameter poles)
- Stainless Steel Band-it Clamps for larger poles and towers



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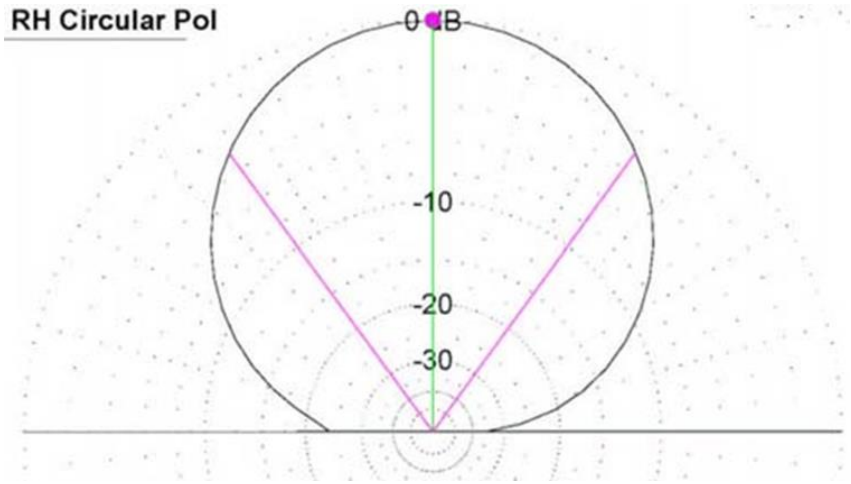
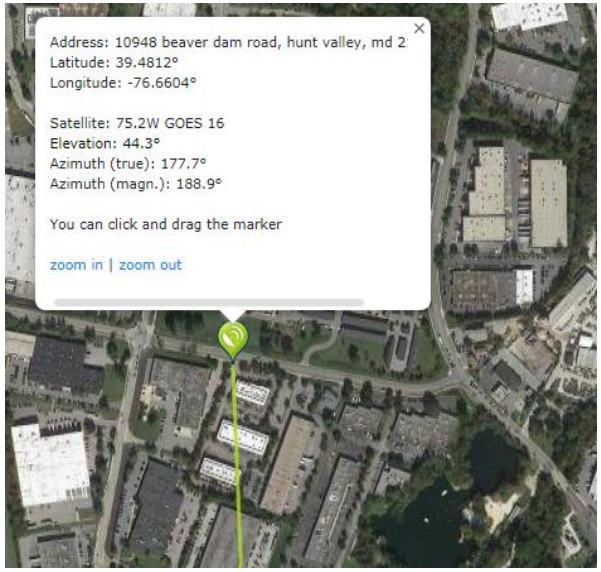
Aiming

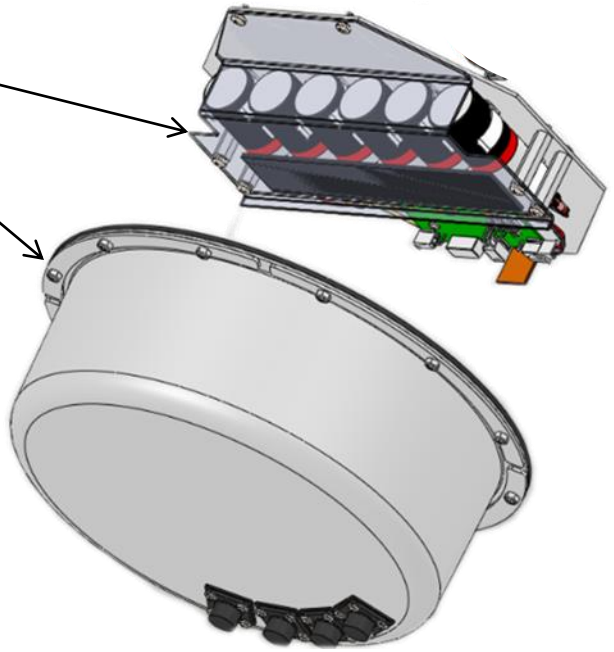
- The integrated UB6 antenna has a gain of 6dBi with a 3dB beamwidth of 78 degrees
- Use dishpointer.com for elevation, azimuth, and direction
- The Stainless Steel Mounting Bracket can be adjusted for 5˚ - 85˚ elevation





Maintenance

- The only routine maintenance needed is changing the battery packs.
- For the most part, this should be done every 5 years.
- To replace the batteries, remove:
  - Bottom Cover
  - 12 Nylon Locking Nuts
  - Retention Plate
  - Neoprene Gasket
  - Connection Cables
- It is important to replace the Neoprene Gasket Seal when changing the batteries



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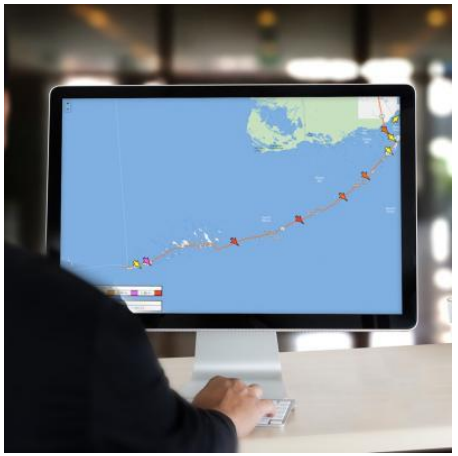
The Data

- Data Reception
  - The DigiRIT HRIT Receive System
  - DAMS-NT Direct Readout Ground Station (DRGS) Receive System
- Data Presentation
  - Microcom's Map-Based Data Presentation Tool
  - Custom-Made Data Presentation Tools



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Hospitality Suite

Please join us upstairs in

room 1444

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