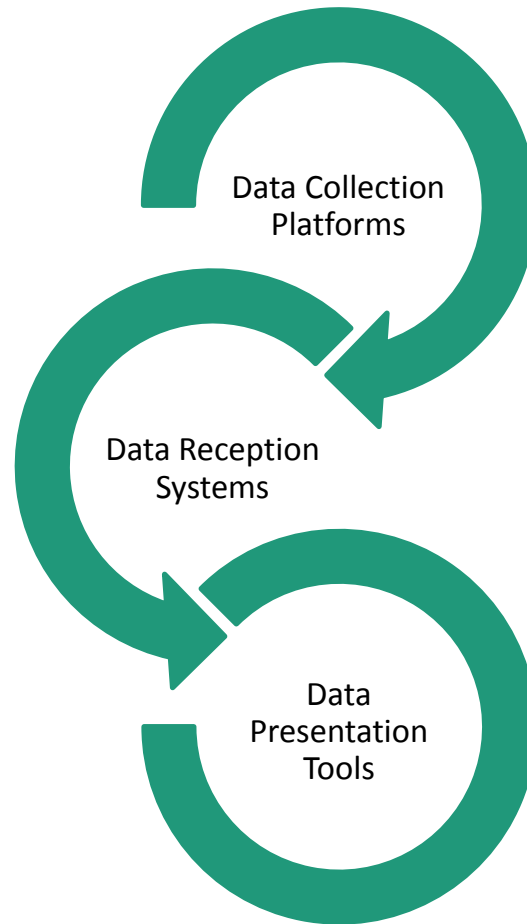MICROCOM

ENVIRONMENTAL ™

History of Microcom

- 1975 – Founded as Microcom Design, Inc.
    - Headquartered in Hunt Valley, MD
    - Focused in Design Engineering, RF Engineering, & Electrical Engineering
- 2003 – Contracted by NOAA to design and build the then-new GOES DCS Receive Systems at National Satellite Operations Facility (NSOF) & National Environmental Satellite, Data, & Information Service (NESDIS)
- 2003 – Developed Microcom's first GOES DCS Transmitter
- 2008 – Hired personnel with over 90 years of collective experience in Hydrology, Oceanography, & Meteorology to head product development & system design for Microcom Environmental
- 2017 – Formally separated the company into two divisions: Microcom Design & Microcom Environmental

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Microcom Environmental Today

- Over 3,500 Satellite Data Transmitters, 55 HRIT Receive Systems, & 34 DRGS Systems deployed across North, Central, & South America – as well as monitoring networks in the Caribbean, Central & South Asia, Africa, & Europe

- Ongoing work with:
    - U.S. Geological Survey
    - NOAA
    - NASA
    - U.S. Bureau of Reclamation Pacific Northwest Region
    - U.S. Army Corps of Engineers
    - National Weather Service
    - National Interagency Fire Center

- 24 Employees

- All Microcom products are manufactured in Hunt Valley, MD

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Complete Data Solutions

Data Collection Platforms

Data Reception Systems

Data Presentation Tools

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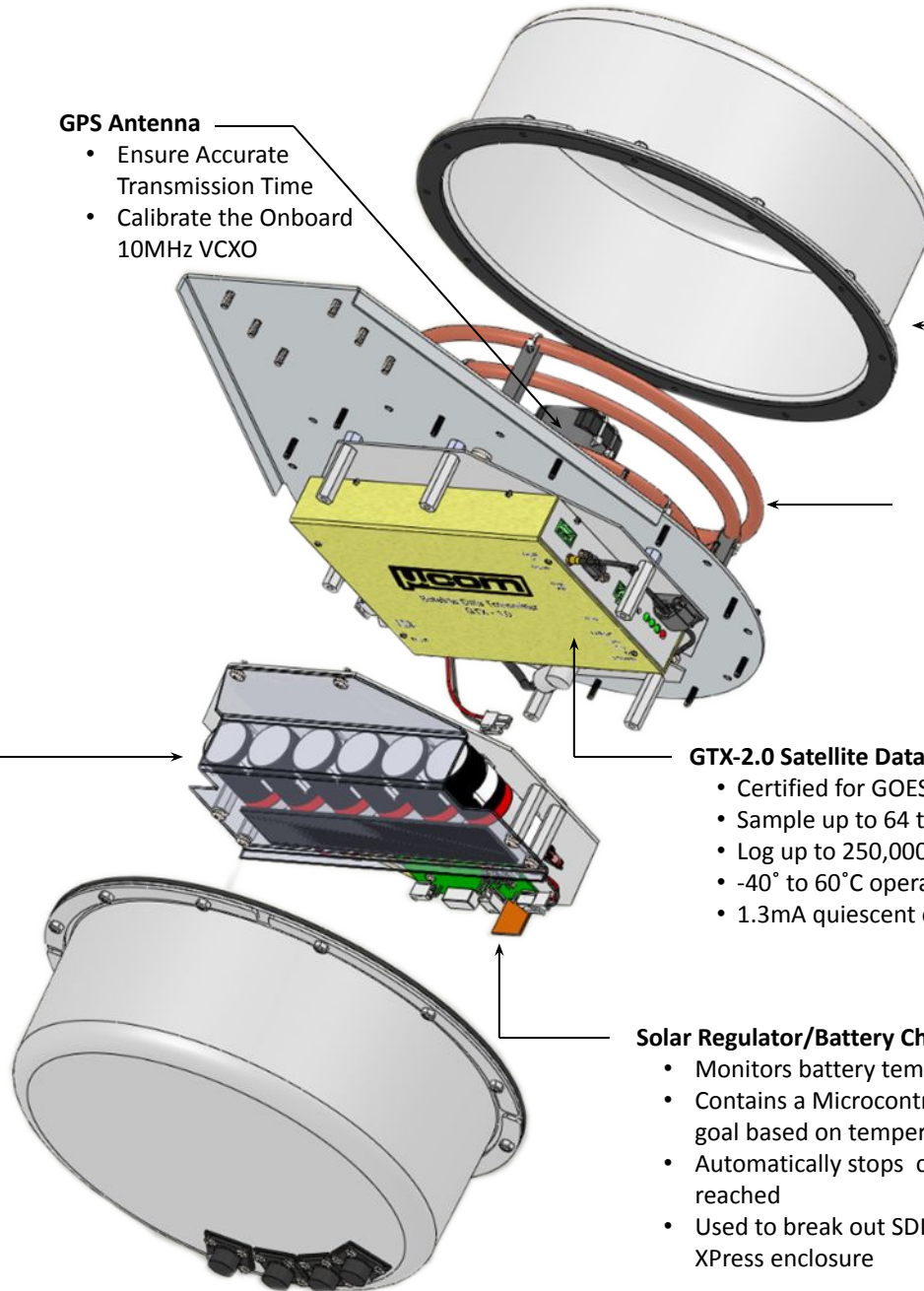- Ensure Accurate Transmission Time
- Calibrate the Onboard 10MHz VCXO

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 that goal is reached
- Used to break out SDI-12 connection from GTX 2.0 to XPress enclosure

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Long-Term Deployment

- Quick & easy set-up

- Cost-effective & versatile mounting options for various applications

- Replaces the need for gage houses and enclosures

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Seasonal Deployment

- Monitor rivers impacted by snow melt in spring and early summer

- Change sensors and monitor drought and fire conditions in summer and fall

Rapid Deployment

- Additional monitoring in anticipation of extreme weather and flooding

- Post-flooding & post-wildfire monitoring

- Temporary replacement for destroyed DCPs after extreme weather

Photo by Dave Evetts, U.S. Geological Survey

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Extreme Applications

- 7 XPress units deployed in Yellowknife, Canada for the De Beers Mining Company to monitor lake water levels

- All 7 continue to operate in constant sub -20°C, heavy snow, and limited sunlight during the winter months

2017/11/30: {5}Air Temp (C.): -23

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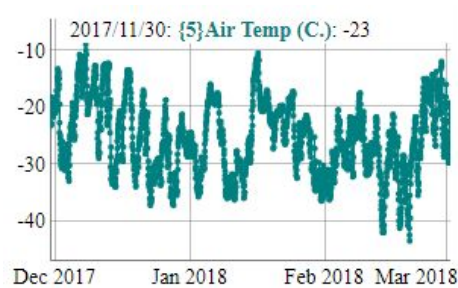
Extreme Applications

- Over 75 XPress units were deployed throughout Florida for the Florida Department of Transportation to monitor wind speed/direction and other sight specific parameters

- 26 units deployed throughout the Florida Keys during Hurricane Irma
  - Recorded wind gusts of up to 140 mph.

- 50 units deployed throughout the Florida Panhandle during Hurricane Michael
  - Recorded wind gusts of up to 208 mph

Appalachicola US 98 Bridge
Oct 10, 2018

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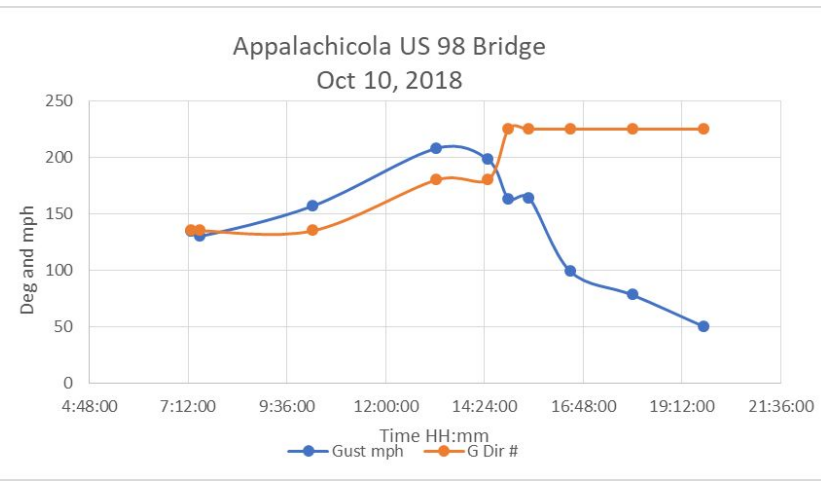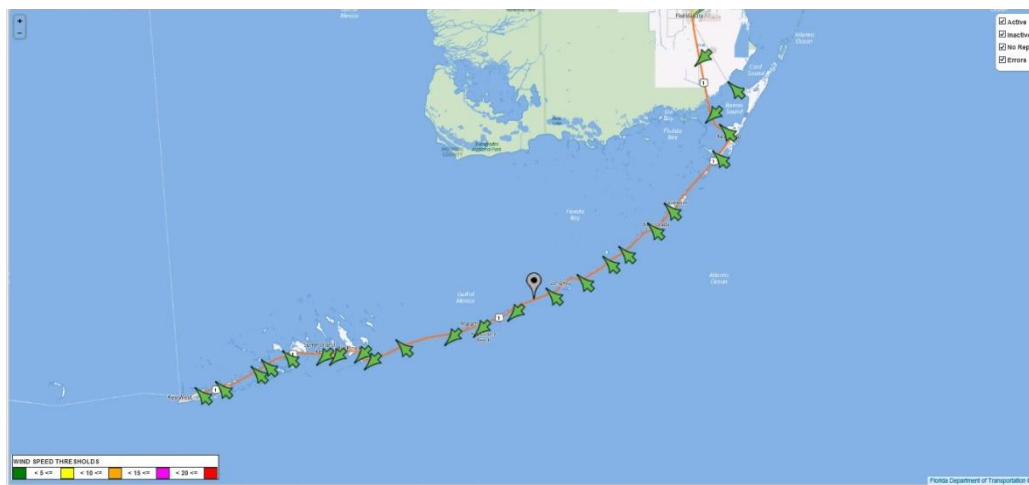
Configuring the XPress

- 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

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

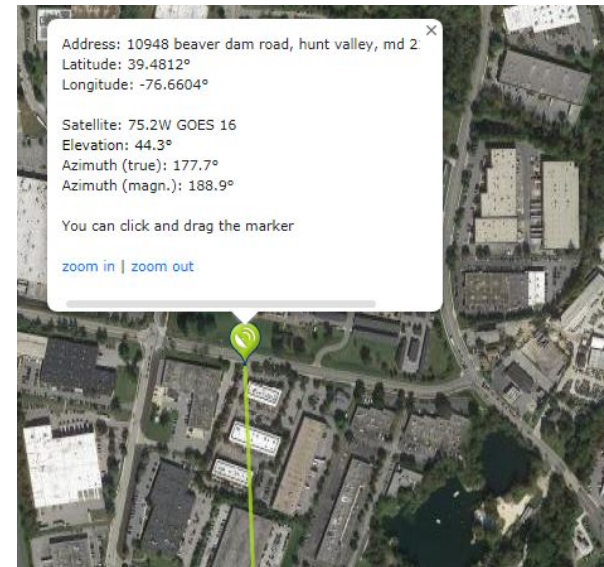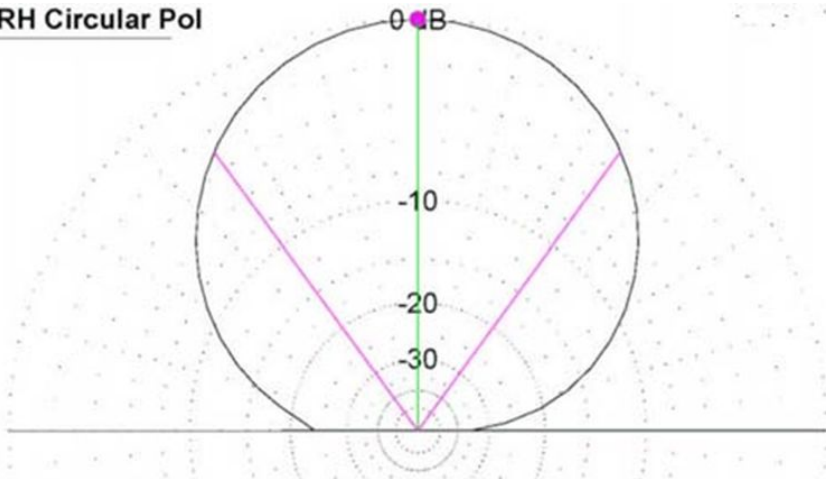

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Mounting

- 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

RH Circular Pol

Address: 10948 beaver dam road, hunt valley, md 2
Latitude: 39.4812°
Longitude: -76.6604°

Satellite: 75.2W GOES 16
Elevation: 44.3°
Azimuth (true): 177.7°
Azimuth (magn.): 188.9°

You can click and drag the marker

zoom in | zoom out

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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:

    - 12 Nylon Locking Nuts

    - Bottom Cover

    - Connection Cables

    - Retention Plate

    - Neoprene Gasket

- It is important to replace the Neoprene

    Gasket Seal when changing the batteries

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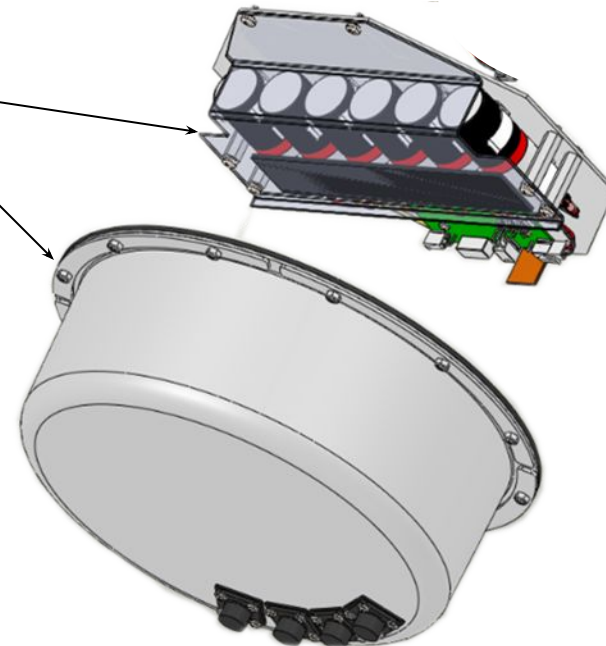
Receive Systems

- DAMS-NT DigiTrak Direct Readout Ground System

    - Direct Reception from the GOES Satellite

    - Lowest latency

    - Most reliable

    - ≥ 3.7 Meter Dish

- DigiRIT HRIT Receive System

    - Rebroadcast of all DCS messages

    - Roughly 20 – 25 second Latency

    - Low-cost

    - 1.5 Meter Dish
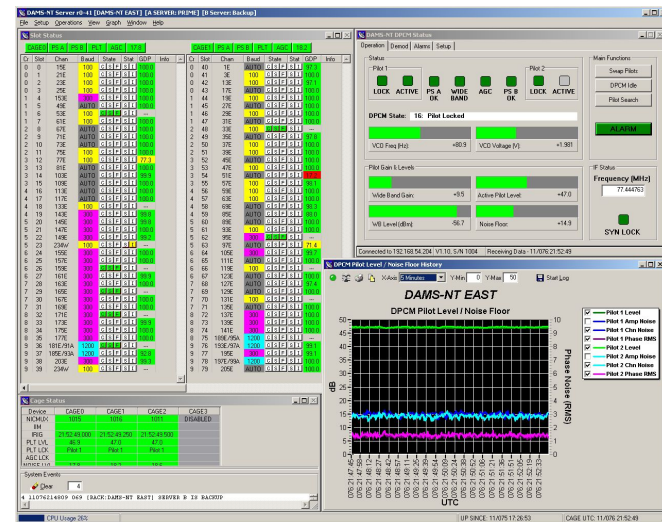

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DigiRIT HRIT Receive System

- Easy installation with 2 people

- Multiple mounting options for various settings

- Independent from DADDS & the internet for enhanced data reliability

- Does not require a dedicated computer

    - Transfers data via an Ethernet connection

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DigiRIT DAMS-NT Software

- DAMS-NT DCP: Common DCS message dissemination protocol supported by most DRGS systems.

- DAMS-NT HiQ: DCS message protocol that supports the Hi-Quality message statistics for better platform performance monitoring.

- SQL Database Option: Message parameters, signal quality statistics, and message data (raw and decoded) stored in user provided database.

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