

**SEN-100 Functional (Operational) Description:**

The SEN-100 (SPuck) is a CR2032 coin cell battery powered, remote water sensor for commercial and individual consumer applications that transmits data to the HS-500 (MarCELL) receiver. The SEN-100 (SPuck) is a transmitter only and is not a receiver. The SEN-100 water sensor's microcontroller, a Texas Instrument MSP430G2553 mixed signal microcontroller, detects the presence or absence of water via a conductivity method signal input at location JP1 and/or location JP2 and/or location JP3. Once the detection of water occurs, the MSP430G2553 mixed signal microcontroller's digitally controlled oscillator (DCO) allows wake-up from a low-power mode to the active mode in less than 1 microsecond. When the presence of water is detected by the metal contacts on the bottom of the SEN-100 assembly, the SEN-100 transitions from the low-power mode to the active mode and then transmits one (1) RF data packet to the HS-500 receiver (base station).

The Micro Controller (MCU, TI MSP430G2553) is the main control unit of the device with built in ADC and internal oscillator. It is powered by a replaceable 3 volt CR2032 coin cell battery with appropriate filtering capacitors. When an interrupt is generated by either the button or shorting the any of the three 2-pin headers, the MCU assembles a packet of data and passes the data packet to the transmitter (SI4012) over I2C protocol. The transmitter then enables the LED during transmission and provides RF energy at +10dBm (FSK Modulated) via it's differential output pins. The antenna is printed on the PCB and is matched to the transceiver using an inductor. The antenna provides an Omni-directional radiation pattern.

The HS-500 then transmits a cellular signal to a nearby mobile phone tower (receiver) which then sends that information to a website server. Website notifications that have been initialized by the user are then immediately implemented. The user receives an alert of the presence of water at the specific SEN-100 location.

The HS-500 (MarCELL) receiver, which is the base station, is called the Cellular Homesitter.

The HS-500 FCC ID is **MIVCNN0301**.

HS-500 manufacturer: Novatel Wireless, Module: CNN0403, Enabler HS 3002, Device ID: 10drC49vBd

**SEN-100 FCC ID: X6U-SEN-100**

**SEN-100 IC ID: 5469A-SEN-100**