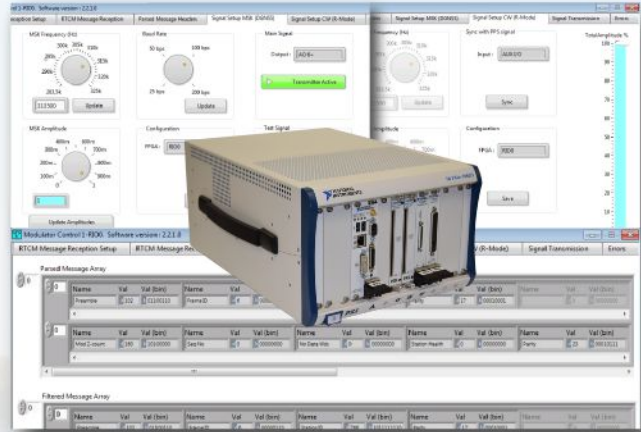


System description

The MSK/R-Mode modulator's hardware is based on National Instruments' PXI technology. The modules required for DGNS transmission via Radio Beacon (PC, FPGA with transceiver board, digital and analog I/O boards) are located in a chassis with common power supply. The modular design allows the components to be exchanged individually. The system can be synchronized using an externally connected time standard (e.g. Rubidium clock) and is therefore suitable for R-Mode (Ranging Mode) transmissions in the medium wave range via Radio Beacon. The *Alberding BeaconSiteControl* software generates the DGNS correction data (with Pre-Broadcast Monitoring) and offers additional options for transmitter control.

MSK modulator with R-Mode functionality

- Modular system design in a PXI chassis from NI
- PC module with Windows 10 operating system and ethernet, RS232 and USB ports
- FPGA module with transceiver board (single or dual)
- I/O boards (digital/analog) for transmitter control
- Software for MSK Modulation of RTCM messages
- Generation of CW signals for R-Mode
- Synchronisation through external time standard for R-Mode (10 Mhz, 1 PPS)



BeaconSiteControl Software

- Base system with web interface
 - Performance overview
 - Configuration and warnings
 - Customisable to special user requirements
 - Supported operating systems: Windows, Linux
- Generation, control and processing of DGNS correction data:
 - GNSS receiver raw data
 - SBAS data (RTCA → RTCM)
 - Correction data from external sources
- Pre-Broadcast Monitoring:
 - Integrity check before transmission of DGNS correction data
 - Generation of integrity flags
 - RTCM message formatting (#1, #9/3)
- Transmitter control:
 - Commands and alarms depending on status
 - Communication with Beacon.net server (e.g. Far Field Monitoring status query)
 - Periodic switching

