MEPT - a WSPR beacon

Versionsgeschichte interaktiv durchsuchen
VisuellWikitext

Version vom 1. Juli 2009, 10:35 Uhr (Quelltext anzeigen) Oe1mcu (Diskussion | Beiträge) (→MEPT CONFIGURATIONS) ← Zum vorherigen Versionsunterschied	**Version vom 1. Juli 2009, 10:36 Uhr (Quelltext anzeigen)** Oe1mcu (Diskussion | Beiträge) (→Vielseitige WSPR Bake für mobile und stationäre Anwendungen) Zum nächsten Versionsunterschied →
Zeile 6:	**Zeile 6:**
− [[Bild:MEPT 1**.jpg]] [[Bild:LCD position**.jpg]]	+ [[Bild:MEPT 1.jpg]]

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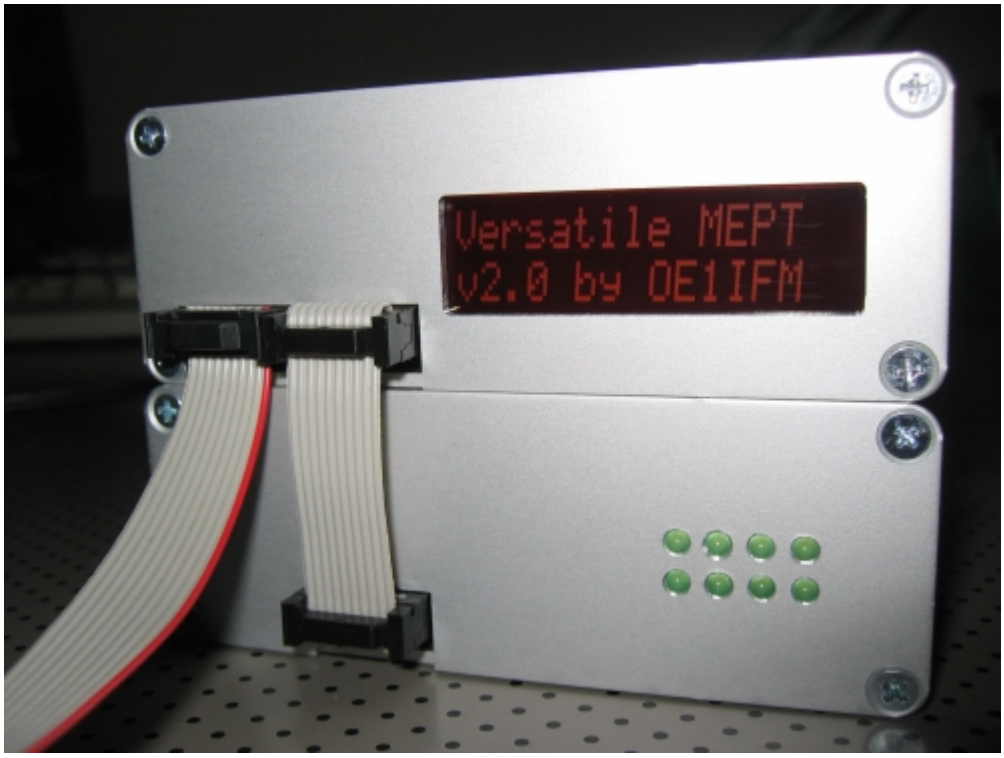
Vielseitige WSPR Bake für mobile und stationäre Anwendungen

MEPT = Manned Experimental Propagation Transmitter



Es dauerte einige Monate - aber jetzt ist es (fast) fertig.

Das Baken Konzept beruht auf getrennten Modulen die nach den speziellen Anforderungen kombiniert werden können.

Anschlüsse:

- **USB interface** für die Windows Konfigurations Software
- **serial interface** zum Anschluss der GPS Maus
- **SPI bus** für die Datenübermittlung zwischen den Modulen
- **ICSP** for in circuit serial programming of the PIC processor

Ausstattung:

- Windows Konfigurationssoftware
- Die Bake läuft unabhängig vom PC
- Zeit und geographische Position werden hochgenau aus dem GPS Signal gewonnen
- Unabhängige Generierung des WSPR Datensatz im Mikrocontroller der Bake
- Bis zu 8 verschiedene Filter über eine Filterschaltbox anwählbar
- Bis zu 4 Dämpfungsglieder Netzwerke durch die Abschwächer Box steuerbar
- Mehrere DDS & PA Module an einem Controller anschließbar
- DDS & PA Modul für 1.8-50MHz mit bis zu 15W

- Bänder (160m / 80m / 40m / 30m / 20m/ 17m / 15m / 12m / 10m / 6m)

At the moment there are two modules. The CPU box with a DDS/PA module and a switch box that can hold up to 8 filter and one attenuator modules

Here you can find an overview of the possible configurations

MEPT CONFIGURATIONS

BASIC Configuration

The beacon system can be configured in various scenarios. The most simple one is the CPU unit with the integrated PA used stand alone. In this setup a LPF filter module is installed within the CPU box. So beaconing is only possible on one band. Either fixed - with pre programmed Locator - or mobile where location information is derived from the GPS signal.

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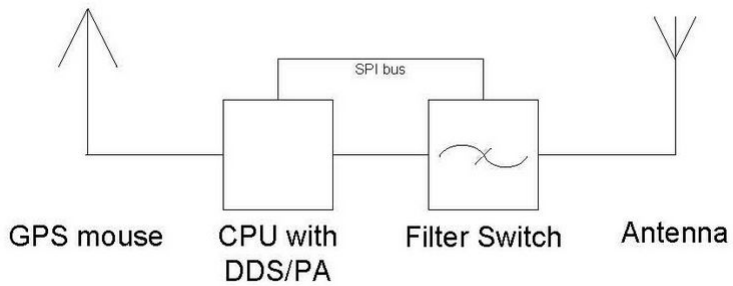
Multiband Configuration

In this setup the filter module in the CPU/PA module is removed and a Filter Switch Module is installed in the signal path. Through the SPI bus the CPU controls the Filter Switch Module. The module can hold up to 8 filter boards, hence enabling the system to transmit on up to eight different bands. Additionaly an attenuator module can be installed in the Filter Switch Module allow driving of a non resonant antenna. Again fixed and mobile operation is possible. In mobile applications usually a smaller number of bands will be choosen, optimizing probability to be heared at all.



Multiband Configuration with Attenuator Switch

Especially for fixed beacon operation transmittion with variable power levels on multiple bands is desired. In this configuration the multiband config is amended by a Attenuator Switch Module. This module can hold up to 4 attenuator boards and is controlled by the CPU through the SPI bus.

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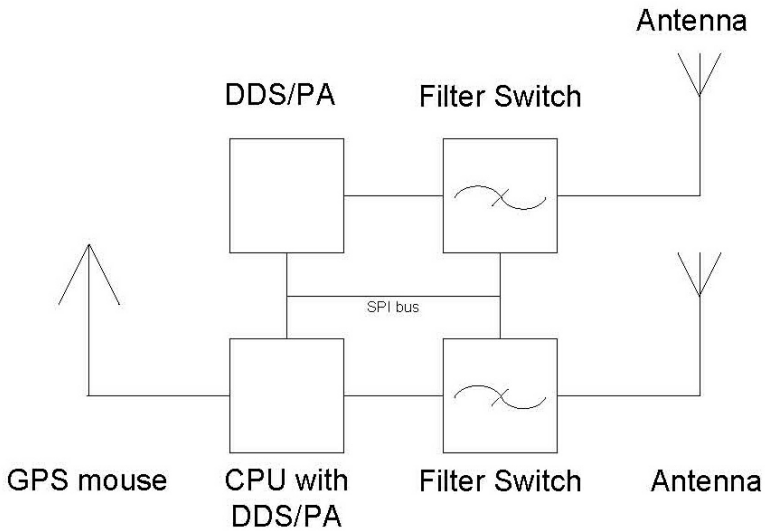
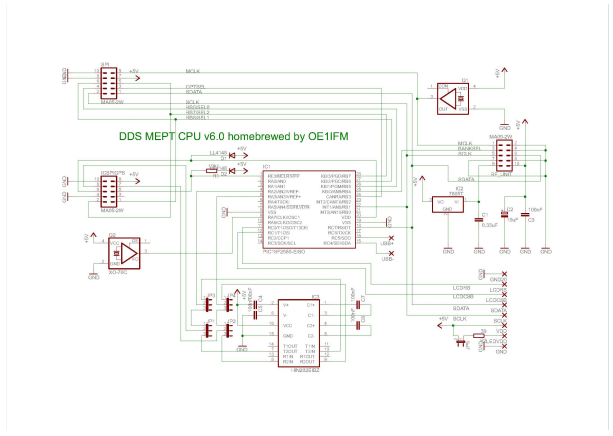
Multiband Configuration with Multiple DDS/PA Modules

When running the beacon in Multiband config with a filter box with 8 boards installed, one will only reach a TX time of 12,5%. To increase the TX time to 25% (or higher) with still covering 8 bands (or more) additional DDS/PA modules with individual Filter Switch Modules can be driven from a single CPU. These signal sources can be attached to diffent antennas as shown, or through a LPF/HPF signal combiner into a single antenna.



MEPT CPU module

The main module holds the CPU with USB and GPS serial interface, the master oscillator and one DDS with a 15W PA module. It can be run stand alone and accepts one filter module on the RF unit board.



MEPT CPU board circuit

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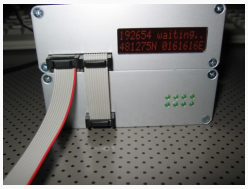

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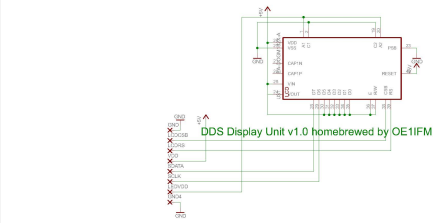
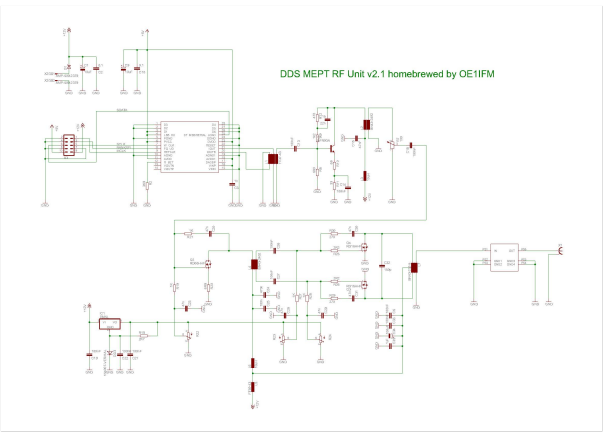


MEPT Display board circuit



MEPT DDS & PA board circuit

MEPT switch module

Weiter Informationen: http://www.oe1ifm.at/