Inhaltsverzeichnis

MEPT - a WSPR beacon

Versionsgeschichte interaktiv durchsuchen
VisuellWikitext

Version vom 1. Juli 2009, 09:59 Uhr (Quelltext anzeigen) Oe1mcu (Diskussion | Beiträge) ← Zum vorherigen Versionsunterschied	**Aktuelle Version vom 1. Juli 2009, 15:48 Uhr (Quelltext anzeigen)** Oe1mcu (Diskussion | Beiträge) (→MEPT SWITCH Module)

(18 dazwischenliegende Versionen desselben Benutzers werden nicht angezeigt)

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Zeile 39: **Zeile 40:**

	+ **== MEPT SWITCH Modul ==**
− **Here you can find an overview of the possible configurations**	+ **[[Bild:MEPT DDS Filter Controller v2.0.jpg|thumb|Controller board circuit]]**
	+ **[[Bild:MEPT DDS Filter Switch v2.0.jpg|thumb|Switch board circuit]]**
− **[[MEPT CONFIGURATIONS]]**	

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	+ **[[Bild:MEPT 8.jpg]]**
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+ [[Bild:MEPT Config2.jpg|400px]]

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+ [[Bild:MEPT_DDS_CPU_v6.0.jpg|thumb|MEPT CPU board circuit]]

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	+
	+ <gallery>
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Aktuelle Version vom 1. Juli 2009, 15:48 Uhr

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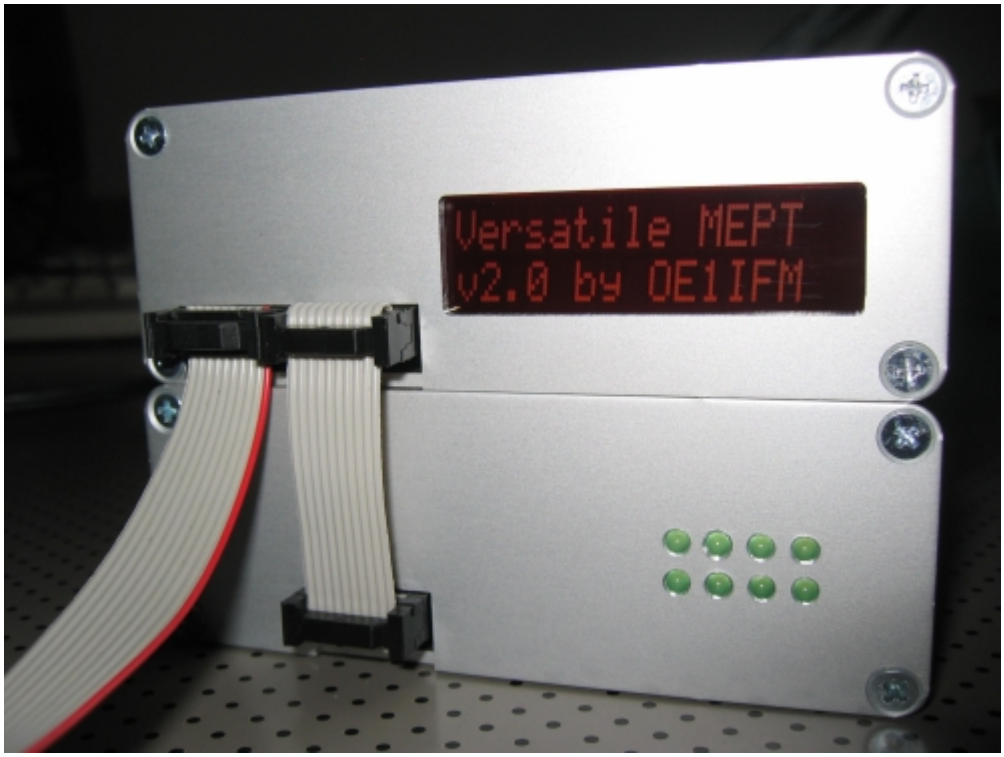

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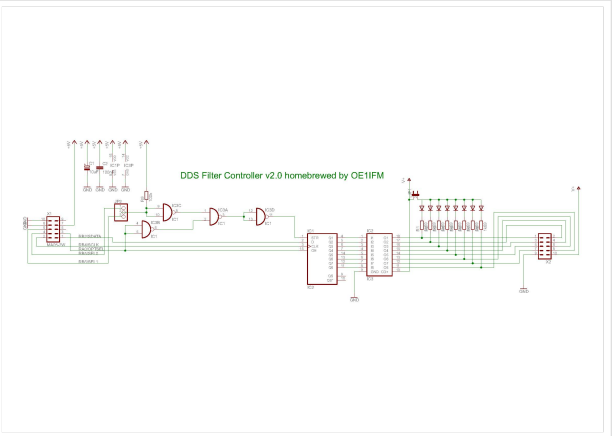
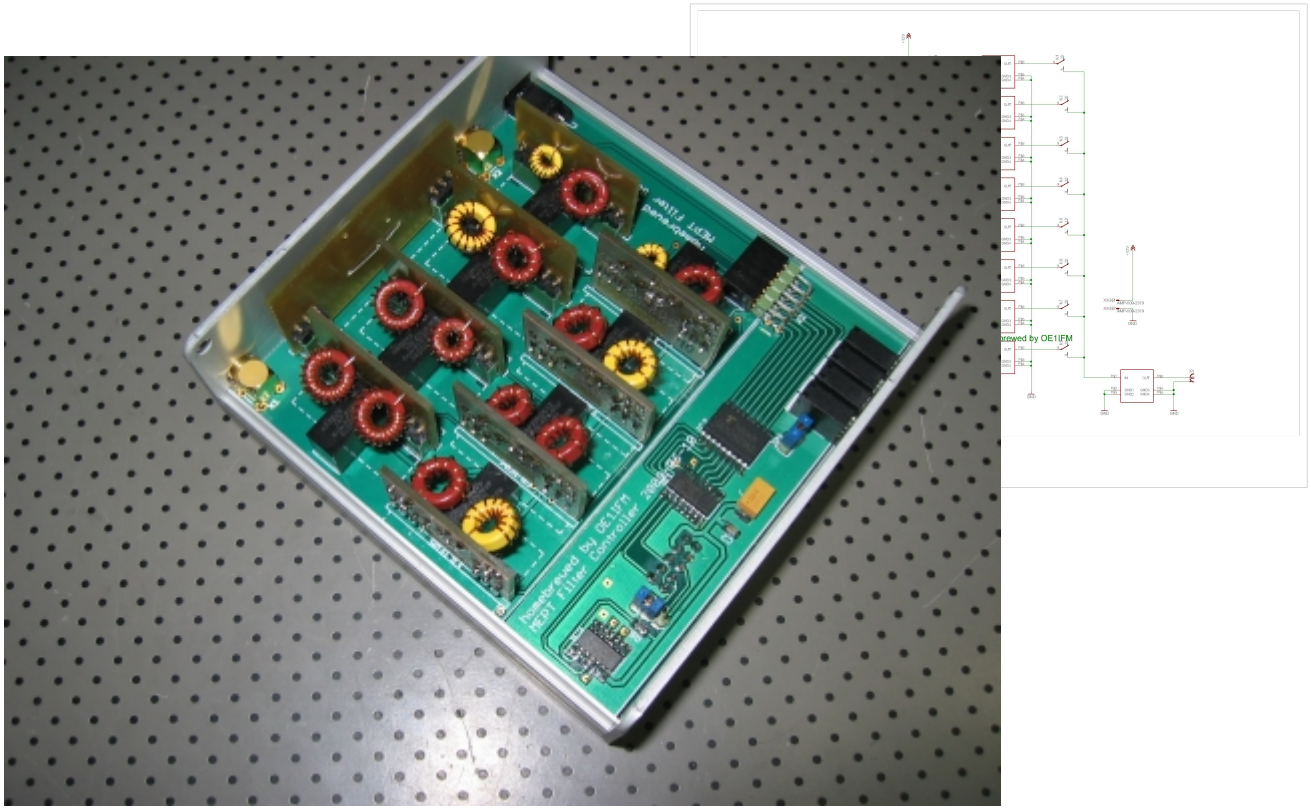


Controller board circuit



MEPT CONFIGURATIONS

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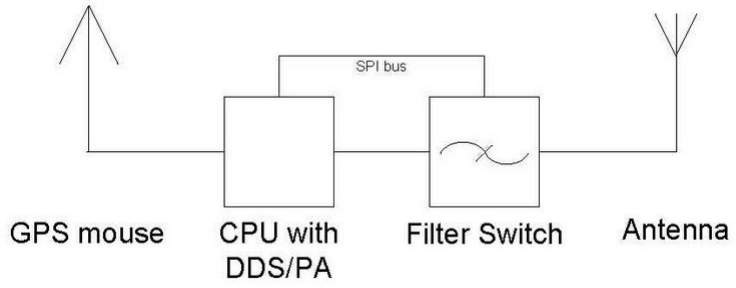

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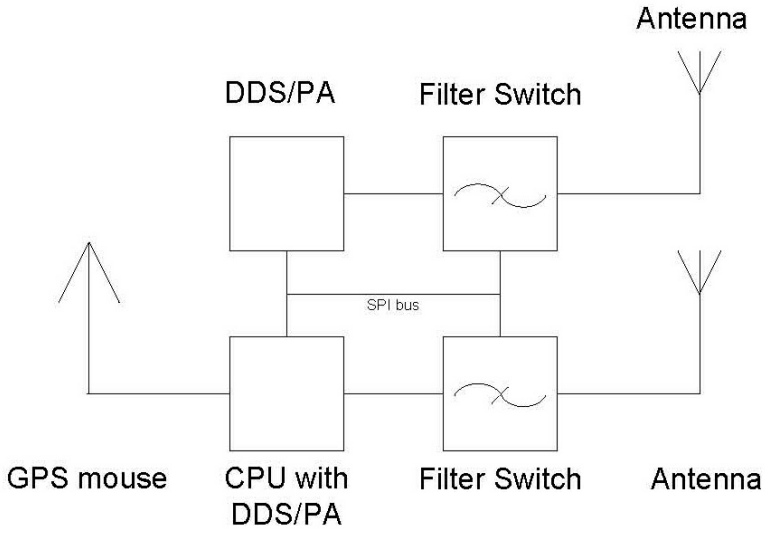

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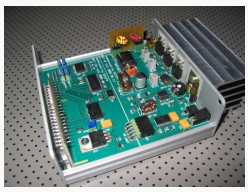

Main Modul Innenansicht

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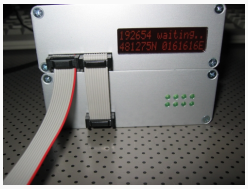
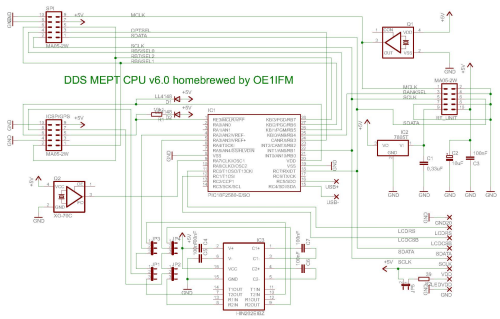
GPS Satelliten Suche



Warten auf Sendeslot

Auf Sendung mit Frequenzanzeige



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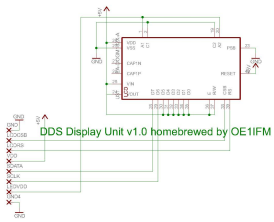

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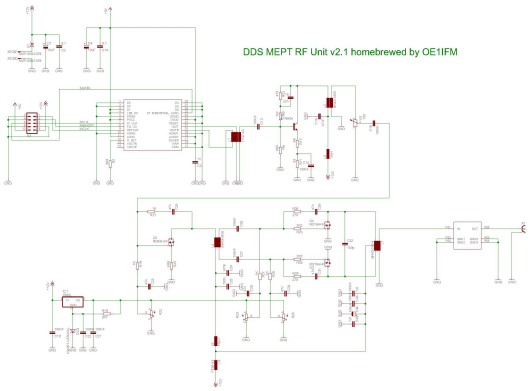

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MEPT - a WSPR beacon: Unterschied zwischen den Versionen

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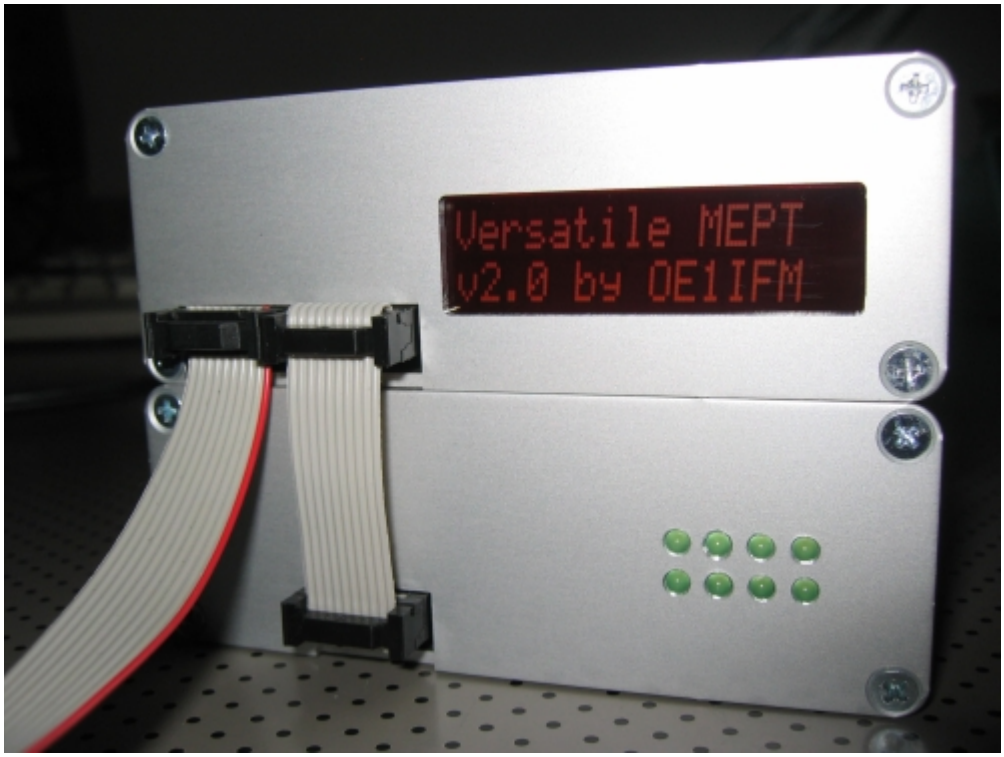

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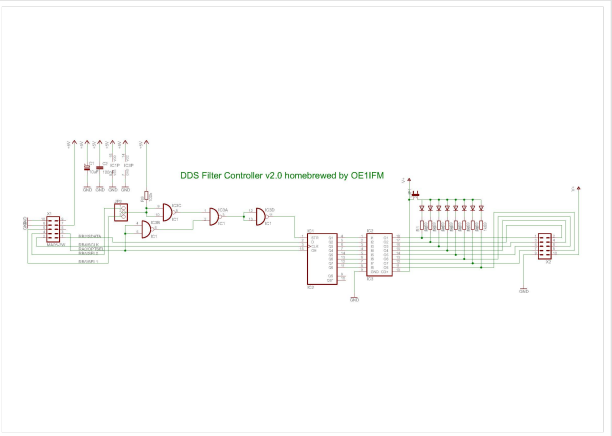

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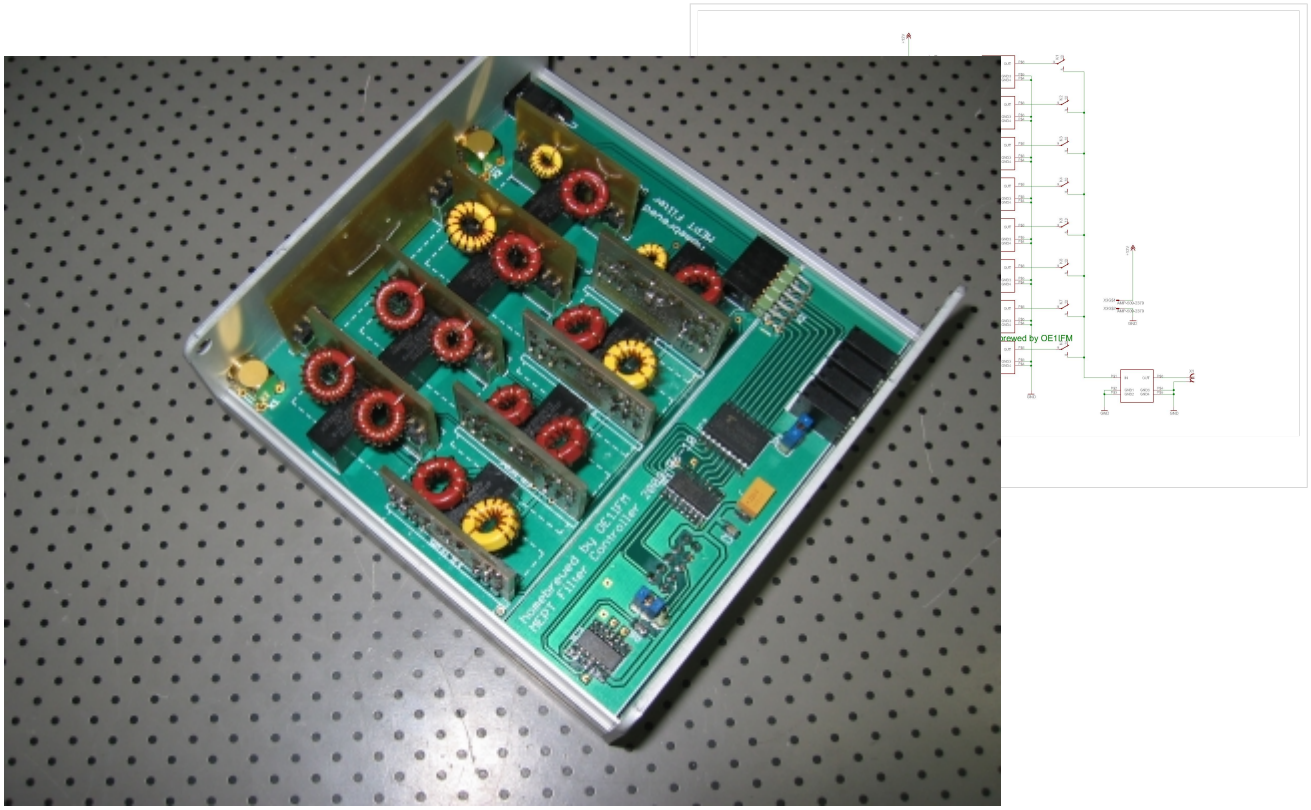

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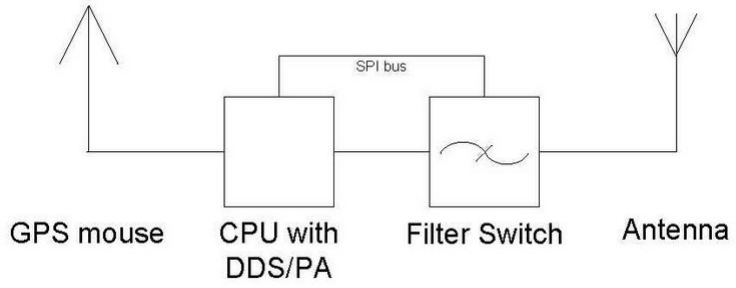

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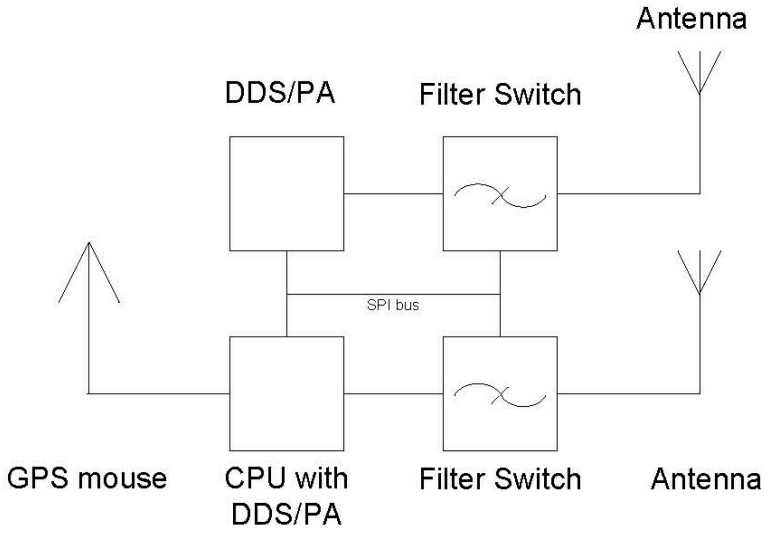
400px

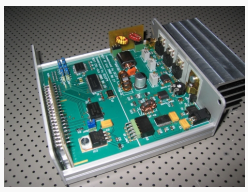
Multiband Configuration with Multiple DDS/PA Modules

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 Modul

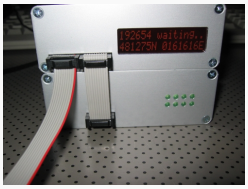
The main module holds the CPU with USB and GPS serial interface, the master oscillator and one DDS with a 15W PA module. It can be run stand alone and accepts one filter module on the RF unit board.



Main Modul Innenansicht

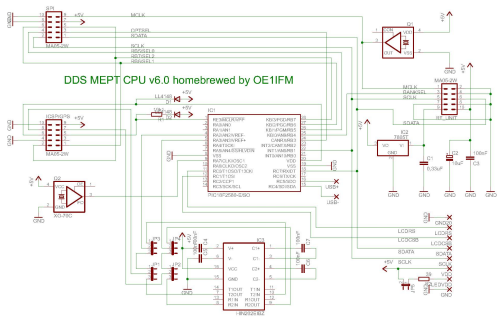
Main Modul Innenansicht

GPS Satelliten Suche

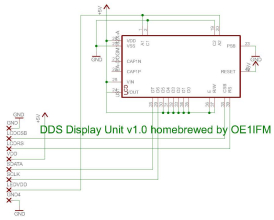


Warten auf Sendeslot

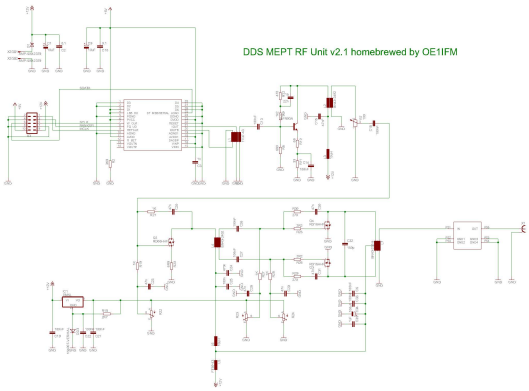
Auf Sendung mit Frequenzanzeige



MEPT CPU board circuit



MEPT Display board circuit



MEPT DDS & PA board circuit

MEPT switch module

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

MEPT - a WSPR beacon: Unterschied zwischen den Versionen

Versionsgeschichte interaktiv durchsuchen
VisuellWikitext

Version vom 1. Juli 2009, 09:59 Uhr (Quelltext anzeigen) Oe1mcu (Diskussion | Beiträge) ← Zum vorherigen Versionsunterschied	**Aktuelle Version vom 1. Juli 2009, 15:48 Uhr (Quelltext anzeigen)** Oe1mcu (Diskussion | Beiträge) (→MEPT SWITCH Module)

(18 dazwischenliegende Versionen desselben Benutzers werden nicht angezeigt)

Zeile 5:

	Zeile 5:
MEPT = Manned Experimental Propagation Transmitter	MEPT = Manned Experimental Propagation Transmitter
	+ **Die MEPT [[WSPR]] Bake sendet für 2 Minuten die [[WSPR]] Bake und wechselt dann automatisch auf ein anderes Band. Die Zeit und den Locator holt sich die Bake vom angeschlossenen GPS Empfänger. Damit können alle Kurzwellen Amateurfunkbänder und 6m abgedeckt werden. Das Gerät ist kompakt aufgenbaut und benötigt für den Betrieb keinen Computer was den Stromverbrauch signifikant senkt.**
− [[Bild:MEPT 1**.jpg]] [[Bild:LCD position**.jpg]]	+ [[Bild:MEPT 1.jpg]]

Zeile 18:

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* '''serial interface''' zum Anschluss der GPS Maus	* '''serial interface''' zum Anschluss der GPS Maus
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	== Ausstattung: ==		== Ausstattung: ==
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Zeile 39: **Zeile 40:**

		+	**== MEPT SWITCH Modul ==**
−	**Here you can find an overview of the possible configurations**	+	**[[Bild:MEPT DDS Filter Controller v2.0.jpg|thumb|Controller board circuit]]**
		+	**[[Bild:MEPT DDS Filter Switch v2.0.jpg|thumb|Switch board circuit]]**
−	**[[MEPT CONFIGURATIONS]]**		

	+ **The switch module can hold up to 8 filter or attenuator boards. For bands from 160m to 6m elliptical low pass filters are ready. I am planning a band pass filter for 6m as the local oscillator signals are below the working frequency.**
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	+ **There will be another switch board with 4 instead of 8 positions that will be able to hold attenuator boards of the same size.**
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	+ **[[Bild:MEPT 8.jpg]]**
– **[[**MEPT **CPU]]**	+ **==** MEPT **CONFIGURATIONS ==**
– [[MEPT **switch** module]]	+ **'''BASIC Configuration'''**
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	+
	+ [[**Bild:config1.jpg|400px]]**

+

+

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+ 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.

+

+ [[Bild:MEPT Config2.jpg|400px]]

+

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+

+ [[Bild:MEPT Config4.jpg|400px]]

+

+

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+ [[Bild:MEPT_DDS_CPU_v6.0.jpg|thumb|MEPT CPU board circuit]]

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+ [[Bild:MEPT_DDS_RF_unit_v2.1.jpg|thumb|MEPT DDS & PA board circuit]]

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+

	+
	+ <gallery>
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Aktuelle Version vom 1. Juli 2009, 15:48 Uhr

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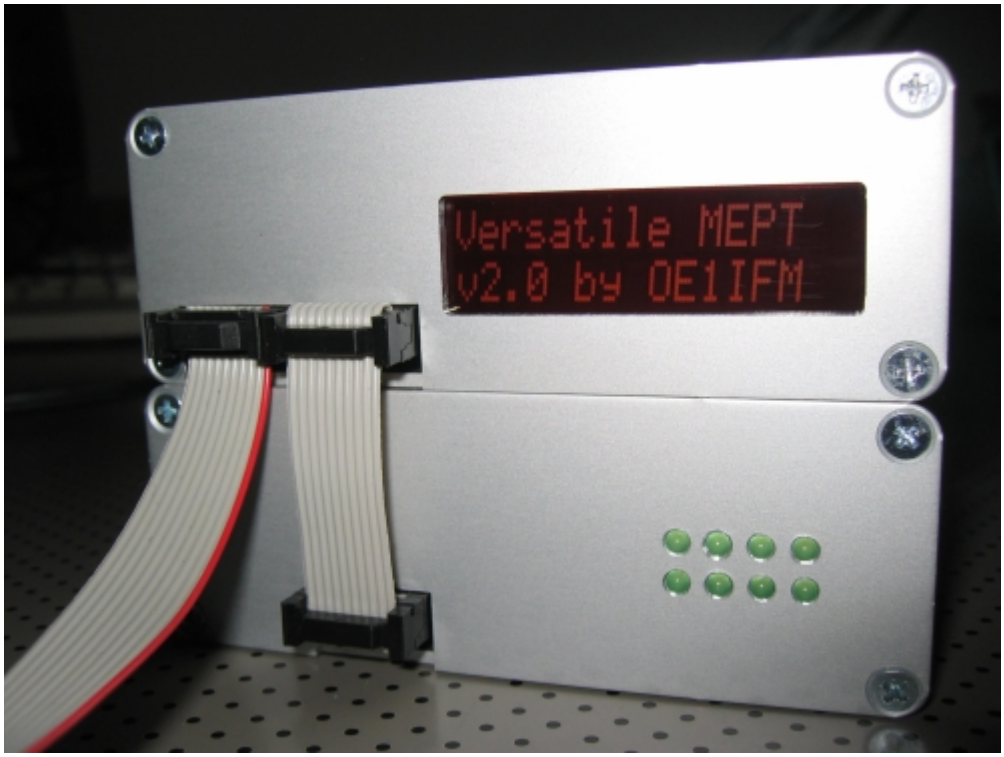


Es dauerte einige Monate - aber jetzt ist es (fast) fertig.

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** zum programmieren des PIC Prozessors

Ausstattung:

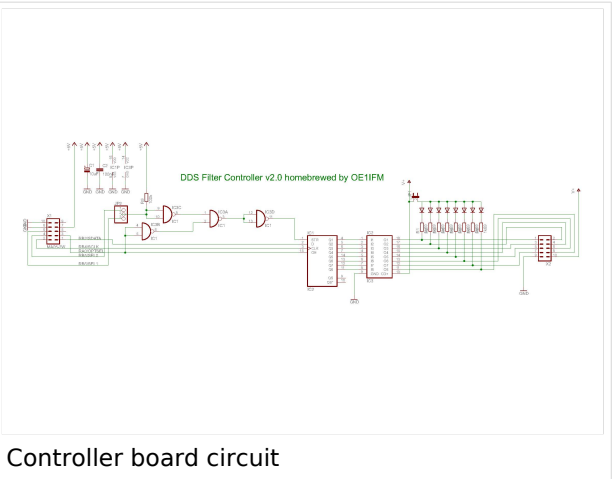
- Windows Konfigurationssoftware
- Die Bake läuft unabhängig vom PC
- Zeit und geographische Position werden hochgenau aus dem GPS Signal gewonnen
- Unabhängige Generierung des WSPR Datensatz im Mikrocontroller der Bake

- 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)

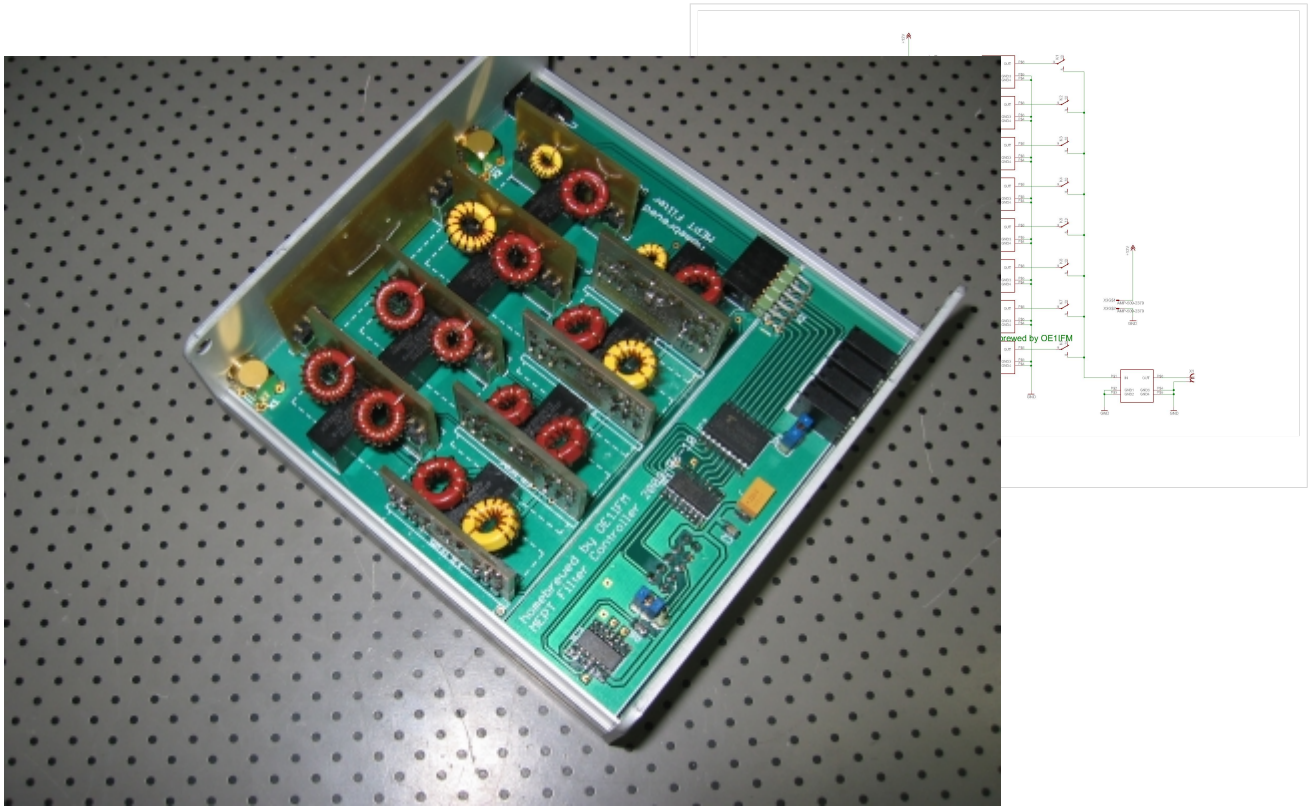
At the moment there are two modules. The CPU box with a DDS/PA module and a switch box that can hold up to 8 filter and one attenuator modules

MEPT SWITCH Modul

The switch module can hold up to 8 filter or attenuator boards. For bands from 160m to 6m elliptical low pass filters are ready. I am planning a band pass filter for 6m as the local oscillator signals are below the working frequency. When used with filters there is one additional slot that can hold an attenuator for using the system on an unmatched antenna. There will be another switch board with 4 instead of 8 positions that will be able to hold attenuator boards of the same size.



Controller board circuit



MEPT CONFIGURATIONS

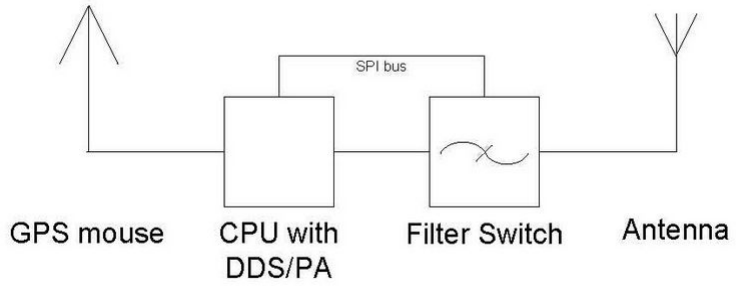
BASIC Configuration

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.

400px

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.



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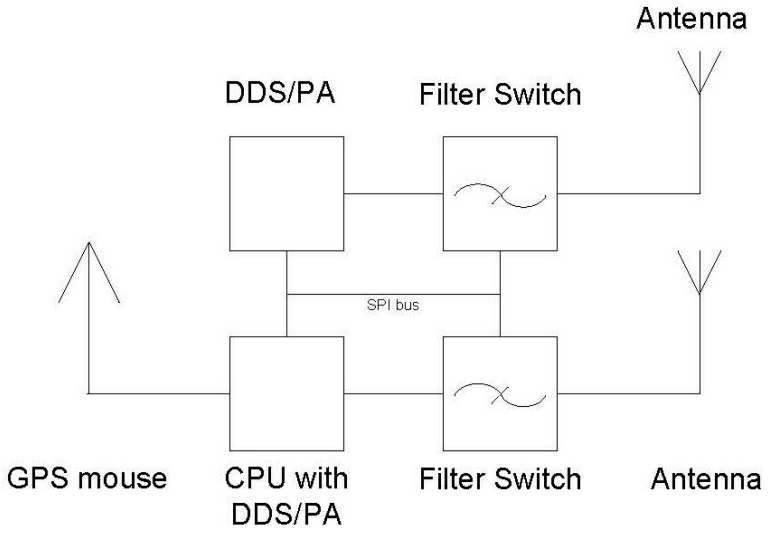

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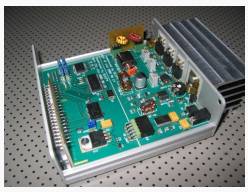
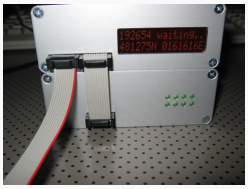


Main Modul Innenansicht

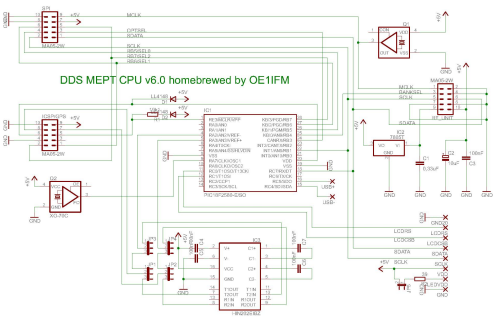
Main Modul Innenansicht

GPS Satelliten Suche

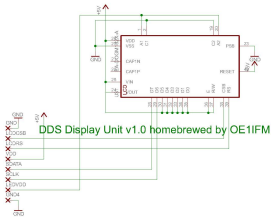


Warten auf Sendeslot

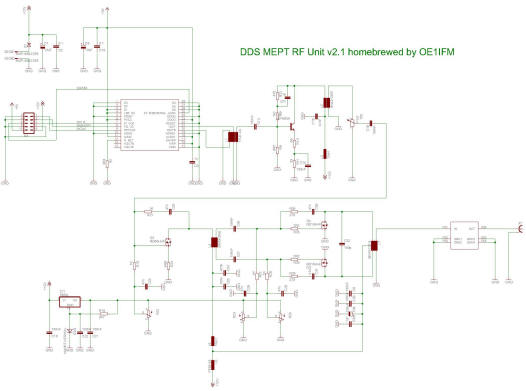
Auf Sendung mit Frequenzanzeige



MEPT CPU board circuit



MEPT Display board circuit



MEPT DDS & PA board circuit

MEPT switch module

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

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Zeile 18:

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+

+ [[Bild:MEPT Config2.jpg|400px]]

+

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+

+ [[Bild:config3.jpg|400px]]

+

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+

+ [[Bild:MEPT Config4.jpg|400px]]

+

+

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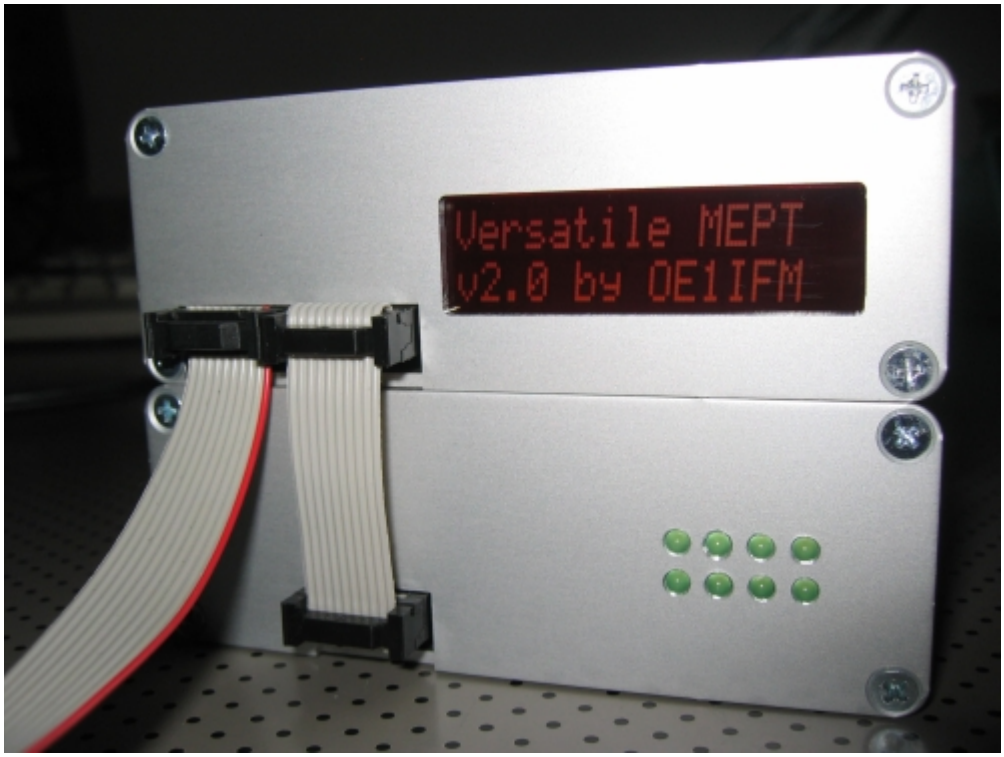


Es dauerte einige Monate - aber jetzt ist es (fast) fertig.

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** zum programmieren des PIC Prozessors

Ausstattung:

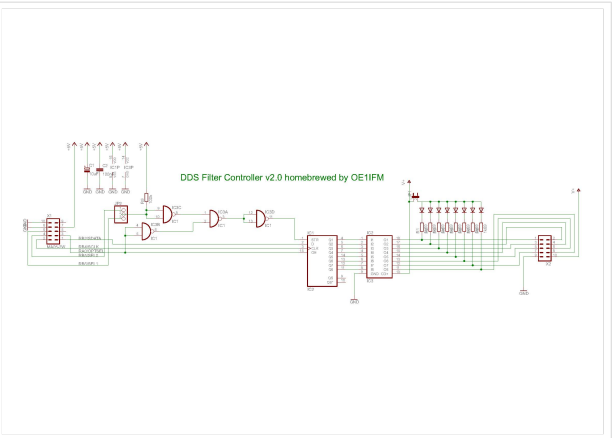
- Windows Konfigurationssoftware
- Die Bake läuft unabhängig vom PC
- Zeit und geographische Position werden hochgenau aus dem GPS Signal gewonnen
- Unabhängige Generierung des WSPR Datensatz im Mikrocontroller der Bake

- 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)

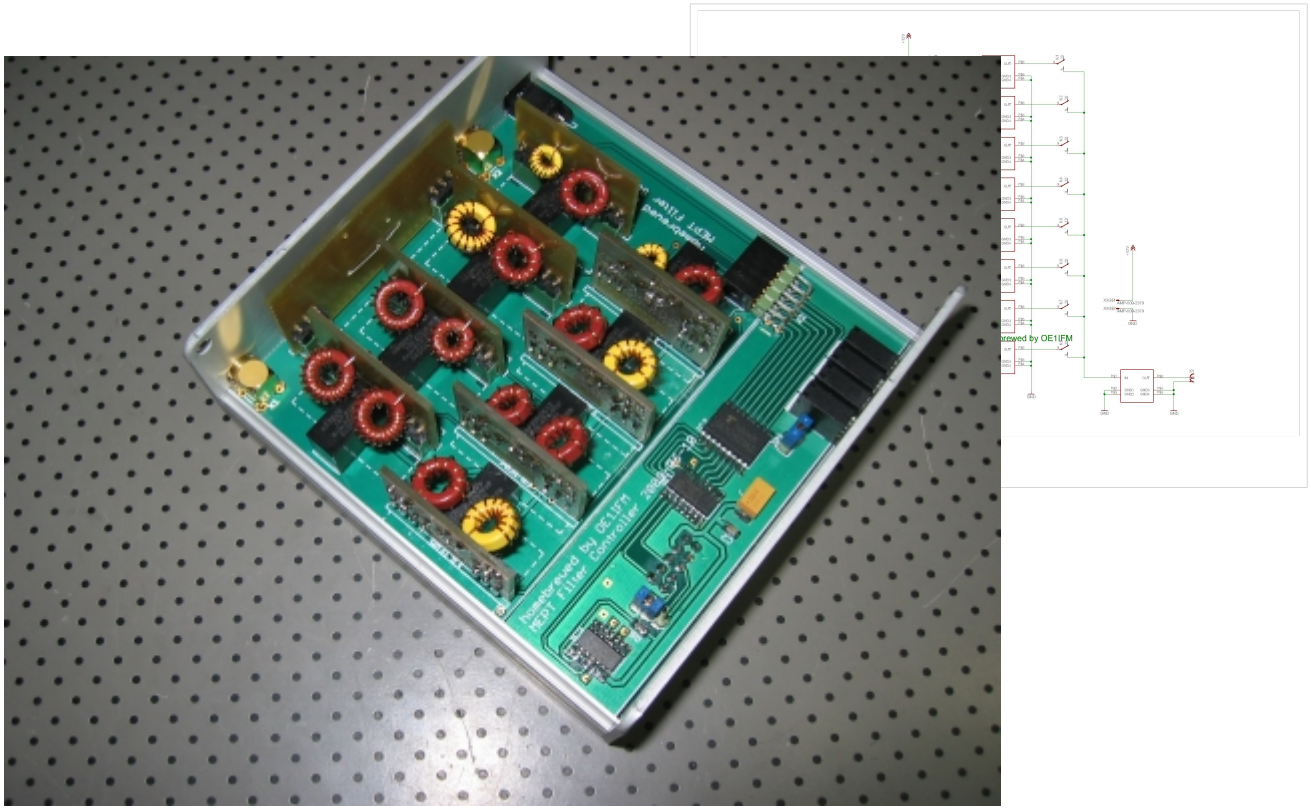
At the moment there are two modules. The CPU box with a DDS/PA module and a switch box that can hold up to 8 filter and one attenuator modules

MEPT SWITCH Modul

The switch module can hold up to 8 filter or attenuator boards. For bands from 160m to 6m elliptical low pass filters are ready. I am planning a band pass filter for 6m as the local oscillator signals are below the working frequency. When used with filters there is one additional slot that can hold an attenuator for using the system on an unmatched antenna. There will be another switch board with 4 instead of 8 positions that will be able to hold attenuator boards of the same size.



Controller board circuit



MEPT CONFIGURATIONS

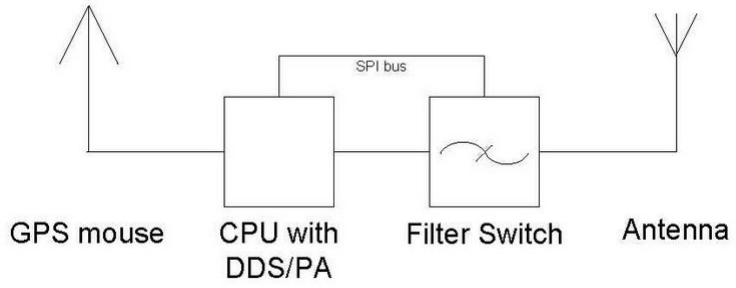
BASIC Configuration

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.

400px

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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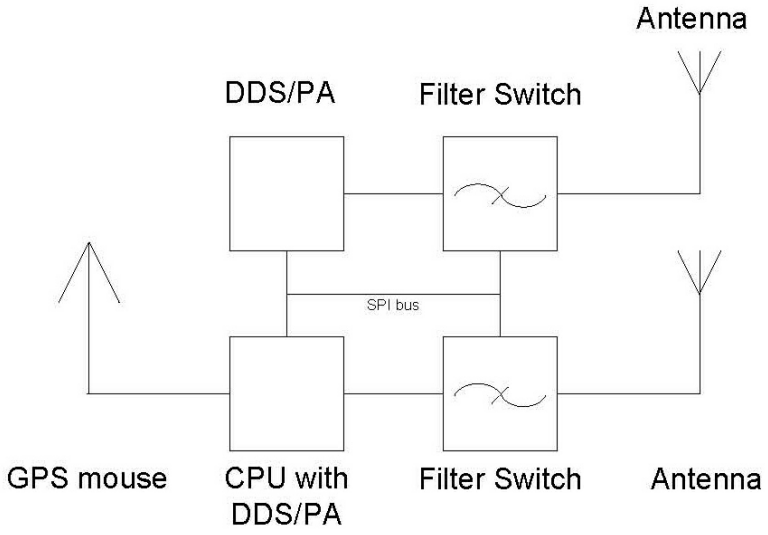
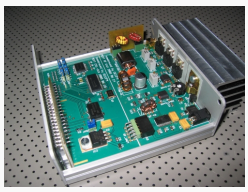
Multiband Configuration with Multiple DDS/PA Modules

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 Modul

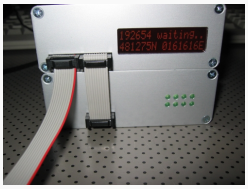
The main module holds the CPU with USB and GPS serial interface, the master oscillator and one DDS with a 15W PA module. It can be run stand alone and accepts one filter module on the RF unit board.



Main Modul Innenansicht

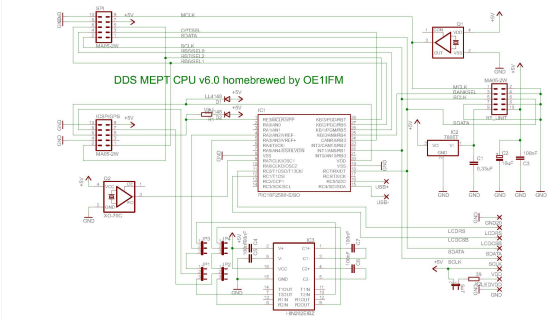
Main Modul Innenansicht

GPS Satelliten Suche

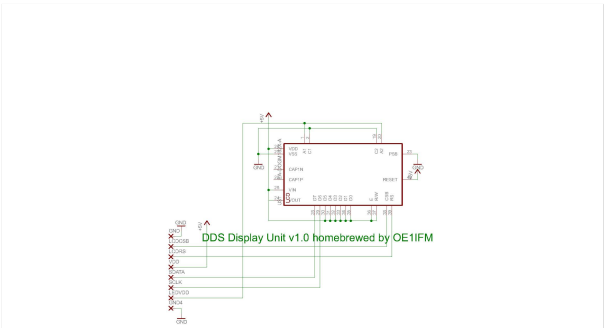


Warten auf Sendeslot

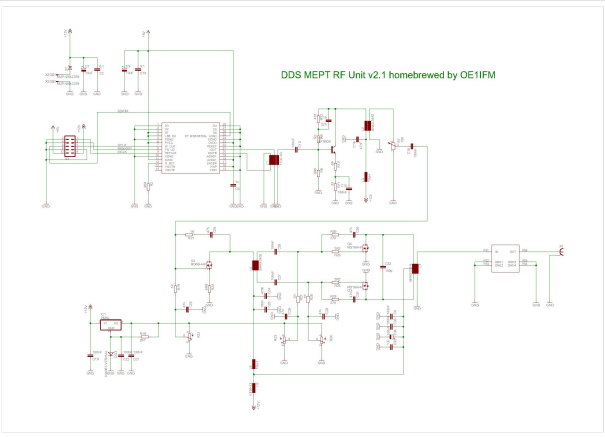
Auf Sendung mit Frequenzanzeige



MEPT CPU board circuit



MEPT Display board circuit



MEPT DDS & PA board circuit

MEPT switch module

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