VR-2 VLF sampler

developed by

BL-Electronics

VR2 Technical Description

Introduction

The VR2 VLF receiver can measure input signals from two antennas in the 30Hz – 100kHz frequency band. The received data is converted to digital form by a 16 bit ADC and transferred to a PC through standard 10/100base-T Ethernet. The sampling clock is synchronized to GPS.

Technical Parameters

- Size: (w)20mm x (d)15mm x (h)6.5mm
- Mass: 0.8 kg
- Power consumption: 12V 0.5A
- Data collection speed: can be selected with command from the following table

200ksps	100ksps	66.66..ksps	50ksps
40ksps	33.33..ksps	28.5714 ksps	25ksps
20ksps	10ksps	8ksps	4ksps
2ksps			

- Gain can be selected with switches:

Gain	Resolution @ 16 bit ADC [uV/bit]
-18dB	300
0dB	38
+10dB	13
+20dB	3.8
+30dB	1.2

- Channel input termination can be selected with switches:
  50 Ohm, 100 Ohm, 200 Ohm, 620 Ohm

- Internal TU35-D410 or CW25-TIM GPS receiver, binary or NMEA messages and 1PPS are available on external GPS OUT connector
- 10/100base-T standard Ethernet connector
- 2 USB2.0 host port
- 1 USB2.0 peripheral port
- available system resources:

  - 128Mbyte SDRAM (32Mbyte used by rootfs, 2Mbyte used by kernel)
  - 4Mbyte NOR Flash (3.5Mbyte used by OS and boot-loader) Flash is mapped as MTD, can be mounted as a disk drive
  - 512kbyte EEPROM

Software Parameters

–   boot-loader: U-Boot 1.1.6 can boot from:
    –   NOR flash
    –   remote tftp server
–   Operating system: uClinux for Blackfin 2007R1 with no-MMU 2.6 kernel
–   Special kernel driver for ADCs.
–   Standard kernel drivers for USB and Ethernet controllers.

Current operating software capabilities

–   Framed data transmission listening on port TCP/5000 acting as a server (needs a client on a remote PC)
–   unframed command receive listening on port TCP/6000
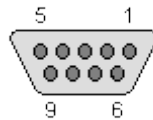
External connectors
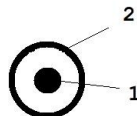
CH1 and CH2 3pin mini Din female

pin	name
1	Signal +
2	Signal -
3	GND

GPS OUT 9pin DSUB female

pin	name
1	1PPS
2	Terminal TX when boot / GPS TX
3	Terminal RX when boot / NC
4	NC
5	GND
6	NC
7	NC
8	NC
9	NC

Power input

pin	name
1	+12V
2	GND

Other connectors are standard RJ-45 for 10/100base-T Ethernet, USB-A and B for USB, SMC for GPS antenna connection.