Features of the MT Measurement System ADU-07e and MFS induction coils

1 The ADU-07e is completely modularized.

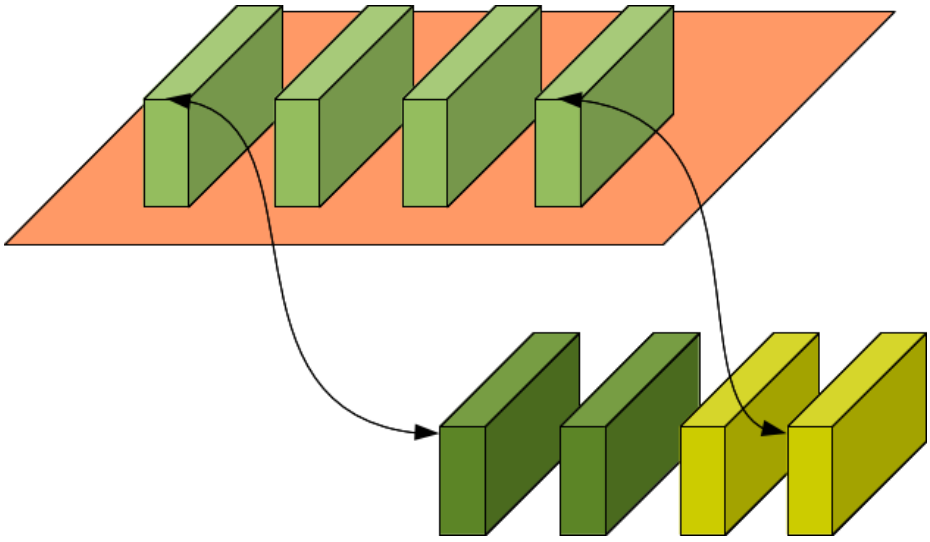

Figure 1 modularized boards

The ADB boards as well as the GPS board and calibration board are pluggable.
The ADU-07e can be equipped with max. 10 boards of LF, MF or HF type. In case the user requires a new board design this can be easily plugged into the ADU. So the design has a future.

2 Frequency Range

The sampling rate of the system is from 524 kHz to 128 Hz. Online and offline filtering allow sampling rates of 4 Hz, 8 s and lower.

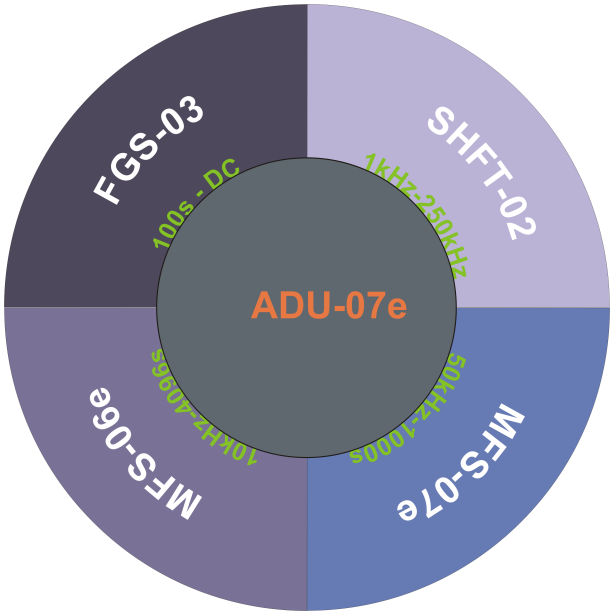

Figure 2 ADU-07e and Sensors

There is no other system which covers the same frequency range, allows near surface studies as well crustal studies.

The ADU-07e is the only system which can measure LF and HF ***at the same time***.

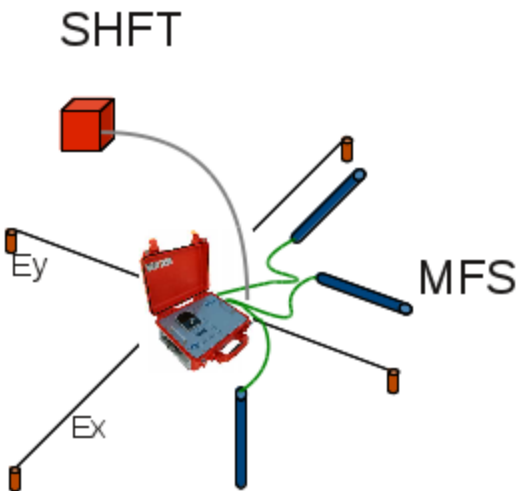

Figure 3 HF and LF measurements at the same time

The ADU-07e is the only system which records 5 channels up to 64 kHz ***continuously***.

3 Intelligent Sensors

The ADU-07e is the only MT system in the world which automatically detects the sensors and loads the calibration function from the sensor.

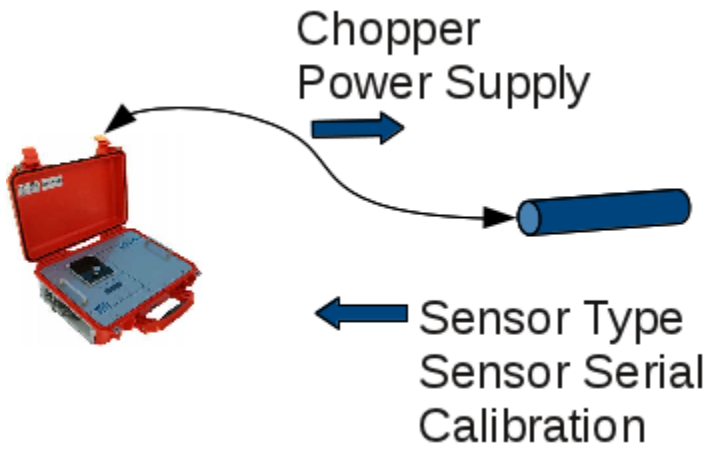

Figure 4 Sensor auto-detection

The system can automatically calibrate the sensors. This can be used to update the calibration of the coil or as a quality check.

4 Linux Operating System

The Linux operating system is under continuous development and open source. The ADU-07e uses this operating system and integrates a MT measurement system with network and server facilities.

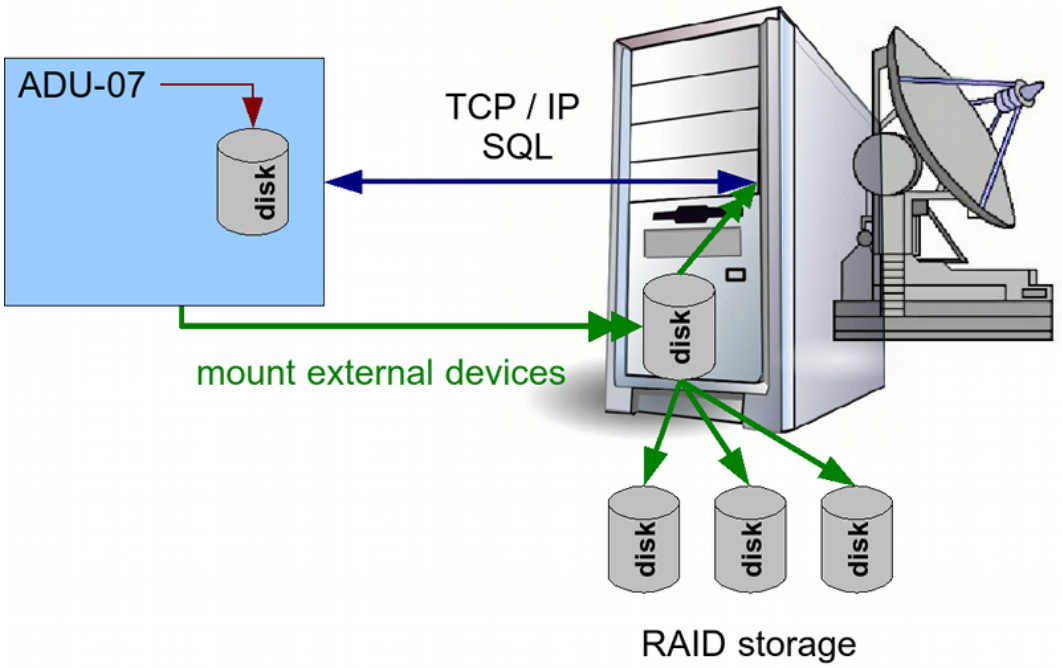

Figure 5 Native Network Integration

The ADU-07e connects to the world wide web like a web-server and file-server. All drivers are integrated by the operating system.

5 Web Browser Access

The system can be accessed by any web browser – from a Laptop computer or from any smart phone with a browser.

Figure 6 ADU-07e connected to smart phone

The access is fully transparent. There is no difference whether the ADU is connected by cable, wireless LAN, Internet or by mobile telephone (GPRS; 3G)

The system can be fully remotely operated: If you have or give the ADU-07e a visible IP address the system can be operated from any place in the world. Also maintenance and trouble shooting can be done from Germany to your ADU-07e.

6 XML Format

The ADU-07e has ***open interfaces*** to the user. There are no proprietary protocols ore commands to operate the ADU-07. All commands and all log messages are XML files:

```
?xml version="1.0" encoding="UTF-8" standalone="no" ?>
<measurement>
  <recording>
    <start_time>10:02:52</start_time>
    <stop_time>10:02:52</stop_time>
    <start_date>2008-01-25</start_date>
    <stop_date>2008-01-30</stop_date>
    <input>
        ........
</measurement>
```

Also the binary time series formats are open.

Both concepts allow you to operate the ADU and analyze as you want. You are not depending on the manufacturers software if you don't want.

The new XML interface structure of the ADU-07 allows to store thousands of measurement data header in SQL databases.

index	Site	Start Time	Stop Time	XML Data
1	Changchun	2008-07-01 00:00:00	2008-07-02 00:00:00	<measurement> <recording> <start_time>00:00:00</start_time> <stop_time>00:00:00</stop_time> <start_date>2008-07-01</start_date> <stop_date>2008-07-02</stop_date> <input> ..... </measurement>
2	Changchun	2008-07-02 00:00:00	2008-07-03 00:00:00	<measurement> <recording> <start_time>00:00:00</start_time> <stop_time>00:00:00</stop_time> <start_date>2008-07-02</start_date> <stop_date>2008-07-03</stop_date> <input> ..... </measurement>
3	Sheshan	2008-07-01 00:00:00	2008-07-02 00:00:00	<measurement> <recording> <start_time>00:00:00</start_time> <stop_time>00:00:00</stop_time> <start_date>2008-07-01</start_date> <stop_date>2008-07-02</stop_date> <input> ..... </measurement>
4		....	....	....

7 Coils

The long term stability of the MFS coils is exceptional. Re-calibration of coils older than 10 years show a difference of less than 1% in transfer functions.
For very long observations it can be guaranteed the measurement can be carried out without interruption.

MFS-06e
The MFS-06e is the only coil world wide which can measure from 4096 seconds up to 2 kHz (“chopper on” mode) and from 10 s up 10 kHz (“chopper off” mode). This broadband coil is most useful for long term observations (depending on the magnetic activity 10,000 s can be recorded as well). Calibration data is stored inside the coil.

MFS-07e
The MFS-07e is less broad band than the MFS-06e. The focus is on AMT measurements, typically 10 Hz to 50 kHz. In the low frequency mode (“chopper on” data quality is good down to 100 s, even 1000 s; but for periods greater than 10 s the MFS-06 is simply better). Calibration data is stored inside the coil.

SHFT-02
The Super High Frequency Triple 02 is focusing of frequencies above 10 kHz or more for AMT and radio MT.

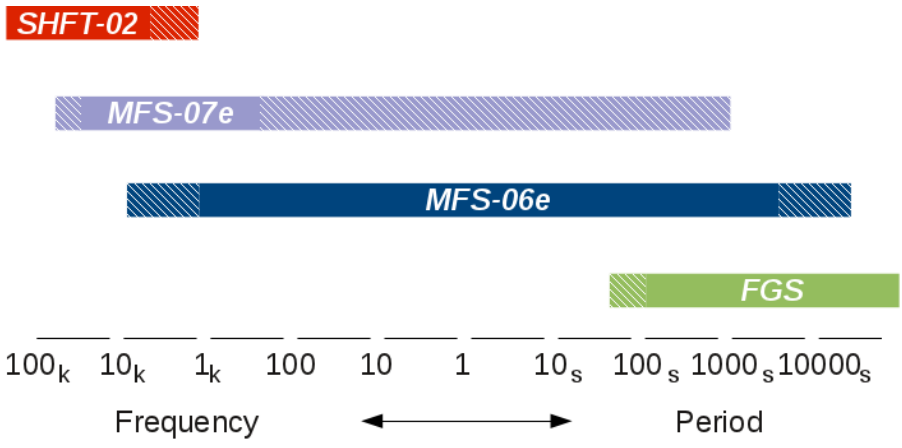

Figure 7 Frequency Ranges