

APPLICATION STORY OF AN MPL PRODUCT

The MPL PIP-5 used in Sulawesi, Indonesia for Geodetic Fault Monitoring

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Application

South-East Asia is a region of high tectonic activity, caused by the convergence and collision of the Eurasian, Philippine and Australian plates at relative velocities of up to 10 cm/yr. The island of Sulawesi, Indonesia, is situated here in a tectonic complex region near the triple junction of these 3 tectonic plates.

In the middle of this collision-zone the Palu-Koro Fault is situated. On a yearly basis so-called transect measurements are made using geodetic GPS equipment. These transect points consist of a number of markers on a line perpendicular to the fault, with a length of about 60 km, where high-precision (2-5 mm) position measurements are made during time intervals ranging from 12-24 hours.

Time series of the movement of the fault can be made by combining the yearly data. This results in estimates of the deformation speed of the fault zone. As can be seen in the image, speeds of 3-4 cm/year are measured in this zone.

The deformation causes a build up of strain that will probably go on until a future earthquake releases the accumulated strain. Estimates of the magnitude of this earthquake range from 6-8 on the Richter scale.

Recently it was decided to install two permanent GPS stations at the sites Watatu and Toboli at both ends of the transect. These two stations will hopefully allow a better understanding and constant data retrieval of the movement of the fault.

Reasons for using MPL products

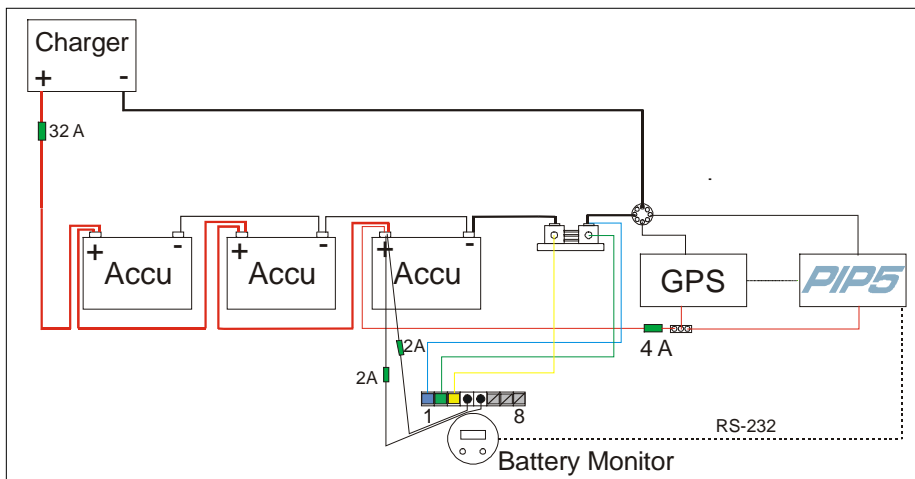
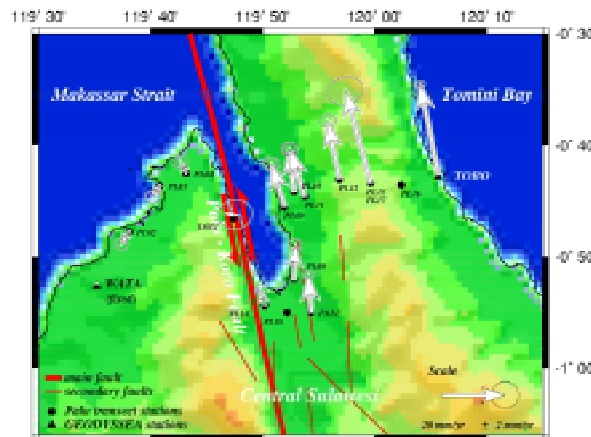
A number of requirements were the reason for choosing the PIP-5 computer produced by MPL.

- The system needs to have a low power consumption
- The system must be compact and easy to transport
- The system must work autonomously for long time periods (1/2 year or more...)

Finally a set-up was chosen using a Leica CRS-1000 Geodetic GPS receiver as the core of the system. Around this receiver an autonomously operating system was designed, using the low power consuming (7.5 W) MPL Pip-5 Industrial PC.

This PC, in this case working on Windows NT, automatically performs daily downloads from the receiver, and stores the data on the internal hard disk and on an exchangeable flash-card unit built into the computer.

2 gel-batteries of 200Ah each were chosen. These batteries are connected to a charger and a battery-monitor that checks the health of the batteries and writes a file with battery parameters to the flashcard. In case of a power-failure the system keeps working on the batteries for about 1 week. In case of trouble at the site, like a power-surge, a power regulator box protects the system from an overload.



MPL delivered

- PIP5-2
- DRAM-32
- HDD-1
- FLOPPY-1
- PCMCIA-1
- Windows NT
- CardWare

