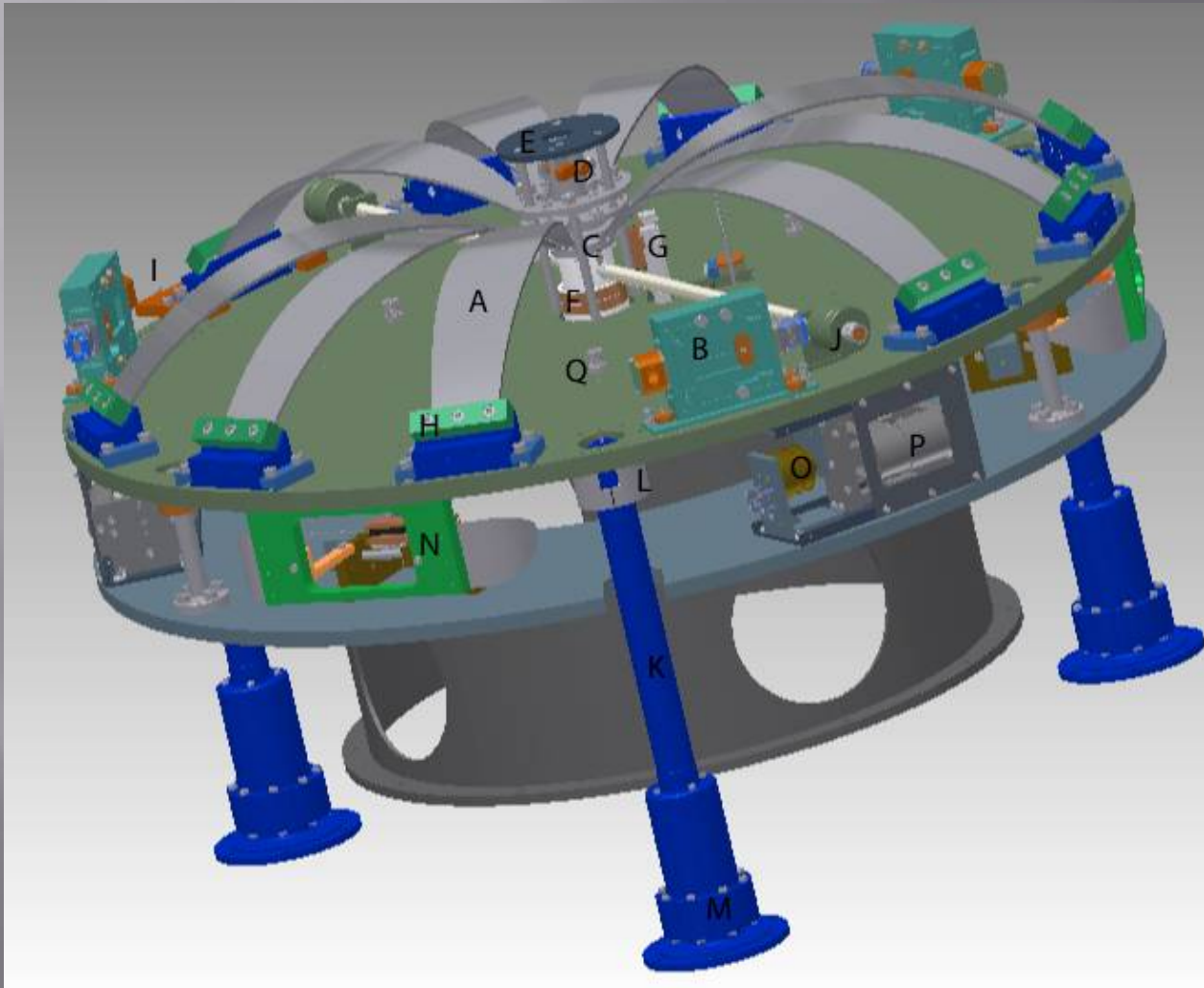# DIGITAL CONTROL OF PRE-ISOLATOR PROTOTYPE

R. Takahashi, K. Yamamoto, T. Sekiguchi

Structure of pre-isolator

GAS blades (A), Horizontal accelerometers (B), Central Keystone (C), Picomotor controlled rotation mechanism (D), Platform for vertical accelerometer (E), Coaxial LVDT and voice coil actuator (F), Stepper motor driven vertical springs (G), Sliding clamps (H), Special tool tuning filter resonant frequency (I), "Magic wand" counterweights (J), Inverted pendulum legs (K), Magnetic dampers (L), Counterweights (M), Stepper motor driven horizontal springs (N), Horizontal LVDT (O), Horizontal voice coil actuators (P), Hooking points of magnetic damper (Q)

Digital control scheme
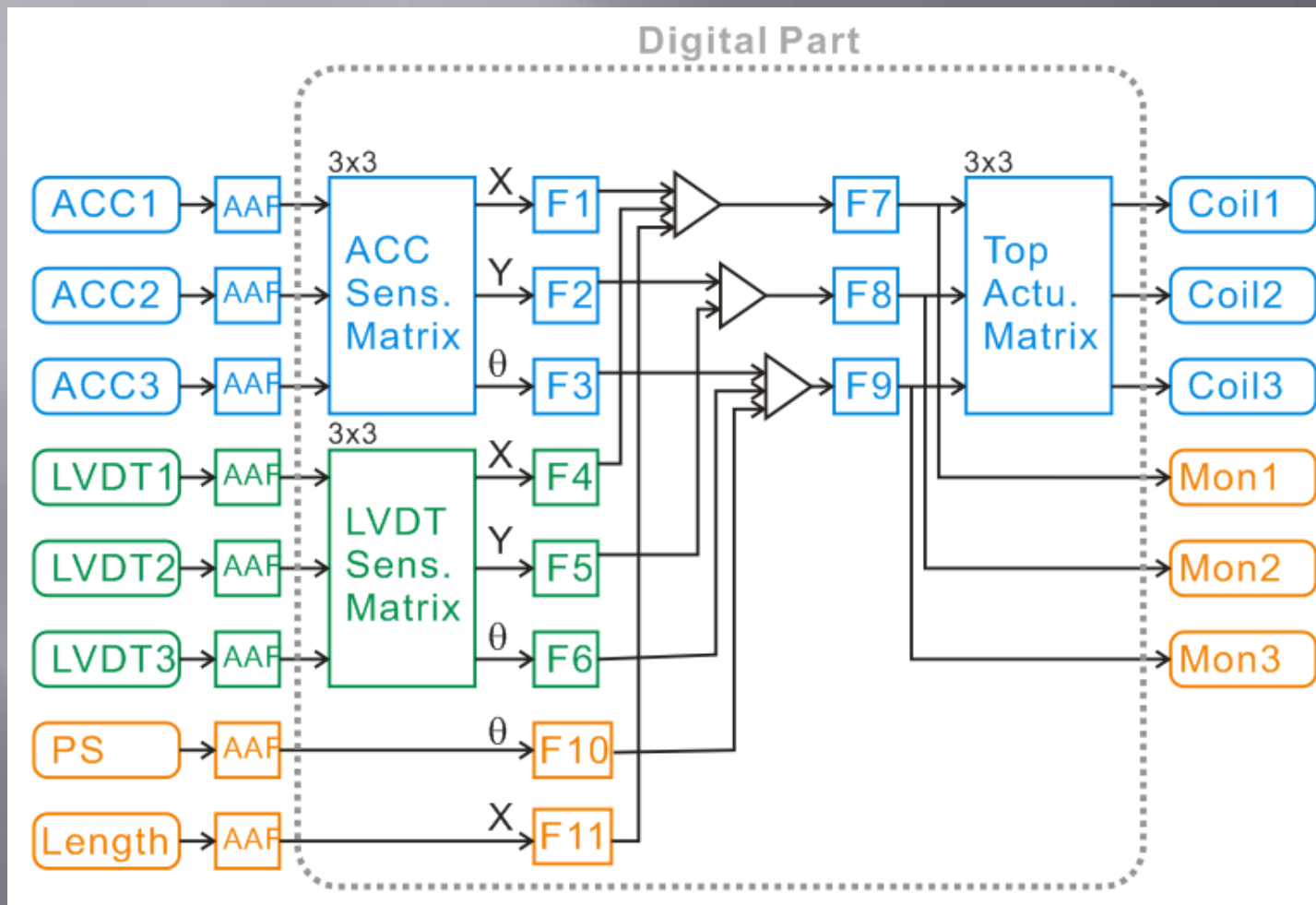
Schematic diagram of IP control loops. PS and Length loops are optional. Smoothing filters for the actuators are necessary.

Control for IP
Input
    ACC x3
    LVDT x3
Output
    Actuator x3
    Stepper motor x3

Control for Top filter
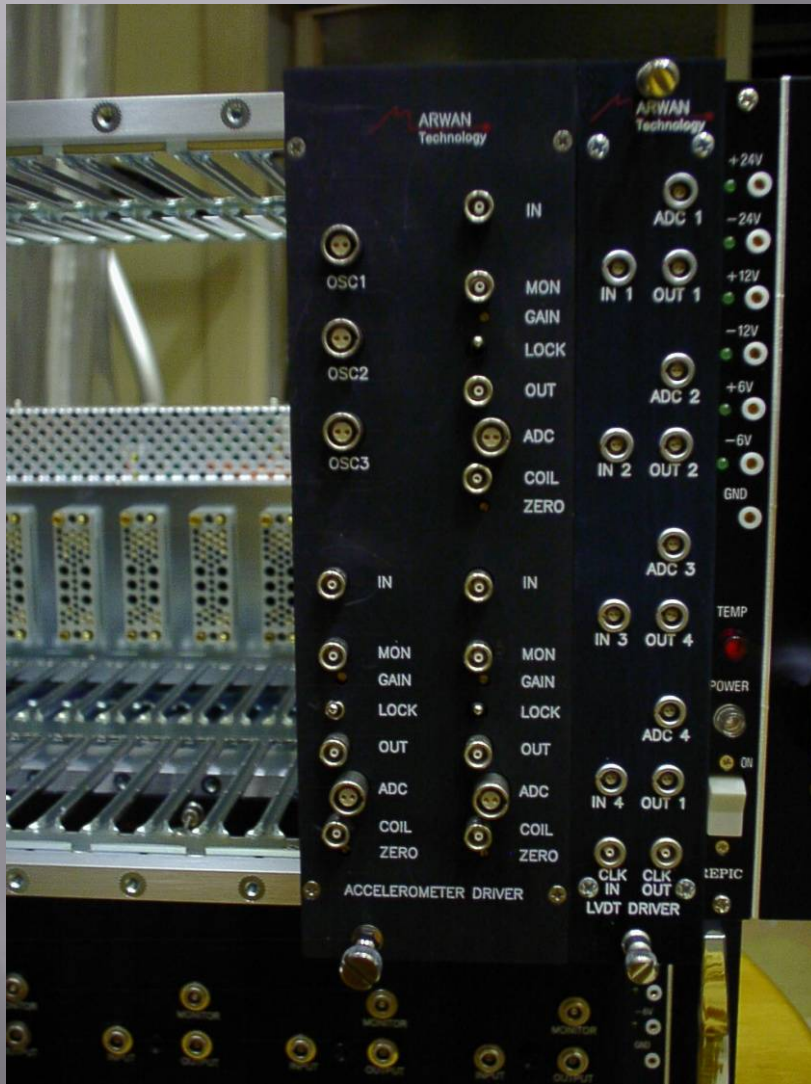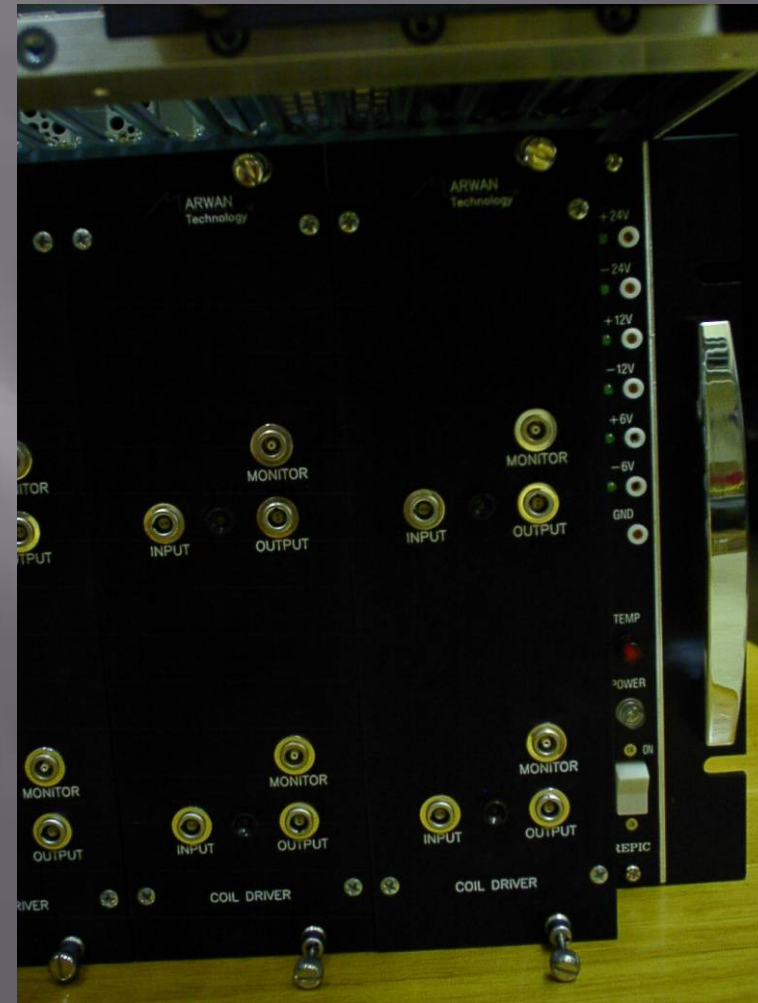Input
    ACC x1
    LVDT x1
Output
    Actuator x1
    Stepper motor x1

Analog drivers

Left: ACC driver, Right: LVDT drive
(We use not accelerometers but
geophones.)

Coil driver

Geophone: Sercel model L4-C
Stepper motor: ALM model C 17.1