Quench Protection Systems for:

Individually Powered Magnets
6 KA

Corrector Magnet Chains
600 A
6 KA

Energy Extraction
- Internal Heaters

Balance Detector
- Digital Detector
- Two (almost) Equal Elements
- 100 mV Threshold
1 complete magnet MQM type

1 complete magnet MQML type

Fig. 4. QPS signals for 2MQM + 2MQML type
Fig. 1. OPS signals for Q1, Q2 and Q3.
Energy Extraction

- External Dump Resistor (usually)

Absolute Detector

- Digital Detector
  - Total Superconducting Voltage Measurement
  - External Current Measurement

- Inductance Model
Corrector Magnet Chain

600 A

Diagram showing an electrical circuit with labels for LD1: U_res, LD1: U_HTS, busbar, U_diff, R_dump, busbar, and LD2: U_res, LD2: U_HTS.
Digilandalog \( \frac{dI}{dt} \) Algorithm

(Hall Probe) \( \rightarrow \) \( \frac{dI}{dt} \) \( \rightarrow \) I

- \( \times 100 \)
\[ \frac{dI}{dt} \]

\[ V \]

\[ Vq \]
600 Amp Energy Extraction
Internal Shunt Resistor Current

External Current Reference

External Current
Dump Resistor Voltage

←Quench Back