Design and development plan for control and data acquisition system of Thailand Tokamak 1 (TT1)

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HT-6M Tokamak

Main Radius, R (m) 0.65 m
Minor Radius, a (m) 0.2 m
Plasma current, I_P (kA) 150 kA

Toroidal Field (TF)
1. Toroidal field (B_T)
   1.52 Tesla
2. Max. Ripple (δ)
   6.53 %
3. Turn current (I_{TF})
   7.64 kA
4. Flat top time (τ)
   100 ms

Poloidal Field (PF)
1. Central Solenoid coils (CS)
   1 pieces
2. Ohmic Heating coils (HF)
   4 coils
3. Vertical Field (VF)
   2 coils
4 Year Plan for HT-6M Reconstructing

Structure (Donated by ASIPP)
- Vacuum Vessel: 1 set
- Toroidal Field (TF): 16 coils
- Poloidal Field (PF): 7 coils

ASIPP
- Vacuum System
- Power Supply System
- Plasma Control System
- Data Acquisition

Diagnostic (University in Thailand)
- HCN Interferometer: Soft x-ray array
- Optical Diagnostic: CCDs Diagnostic
- AXUV Diagnostics: HXR Diagnostics
- LP Diagnostics: SXPHA Diagnostic
- ECE Diagnostic

Building (TINT)
- Structure
- Control Room
- Office
- Workshop

A.D. 2020 - 2021
- THAILAND TOKAMAK 1
A.D. 2020 - 2022
- THAILAND TOKAMAK 1
A.D. 2022 - 2023
Plasma Control System and Data Acquisition

Time Base (IEEE1588)

- **PLASMA CONTROL ROOM**
  - PXI Case
  - PXI6683 card

- **Interlock System**
  - PLC

- **Another Sub-System Area**
  - PXI Case
  - PXI6683 card
  - PXI........... Card

- **Vacuum System**
  - PLC

- **DAQ Room**
  - PXI Case
  - PXI6683 card
  - PXI........... Card

- **Diagnostic Area**
  - PXI Case
  - PXI6683 card
  - PXI........... Card

- **Power Supply Room**
  - PXI Case
  - PXI6683 card
  - PXI........... Card

**Interlock Signal**

**TCP Line**
Plasma Control System and Data Acquisition: DAQ

Diagnostic System
- Voltage/Optic

Signal Processing
- Amplify: 192 Ch.
- Integrator: 16 Ch. x 2

DAQ
- PXI System 96 Ch. x 2
  - 1 MHz  28 Ch.
  - 100 kHz  4 Ch.
  - 20 kHz  20 Ch.
- AD-Diagnostic  140 Ch.

Data Server
- MDSplus
- EPICS
- HDF5
Thank You

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