SYSTEM REQUIREMENTS DOCUMENT

Fast Shutdown Master

04/10/07

SYSTEM REQUIREMENTS DOCUMENT

Fast Shutdown Master

Approvals

Approved by:

_____

Cost Account Manager

_____

Associate Project Manager

_____

Project Manager

TABLE OF CONTENTS

Approvals 2
TABLE OF CONTENTS 3
ACRONYMS….. 4
1 Project Mission 5
2 System Role 5
3 System Requirements 5
4 Required Interfaces 5
5 References 5

ACRONYMS

BSY	Beam Switchyard
CEBAF	Continuous Electron Beam Accelerator Facility
EPICS	Experimental Physics and Control System
FSD	Fast Shutdown
GeV	Giga electron volts
Linas	Linear Accelerator
QCD	Quantum Chromodynamics
us	Microsecond, 10^{-6} Seconds

SYSTEM REQUIREMENTS DOCUMENT
Fast Shutdown Master

1 Project Mission

The 12 GeV CEBAF Upgrade would increase the available energy of the facility from 6 GeV to 12 GeV, and add to its experimental capabilities in order to more fully explore the nature of non-perturbative QCD as manifested in the nucleus, plus potentially solving the riddle of quark confinement.

2 System Role

The Fast Shutdown Master Card is located at the top of the FSD tree and responsible for monitoring the overall FSD signals from all the major CEBAF areas. This will include the Tagger and Hall D FSD signals that will be required as part of the 12 GeV upgrade. It will be possible to mask FSD inputs if they are not applicable to a specific machine setup while other FSD inputs will always be required. If any of the active FSD inputs are faulted then the FSD Master terminates beam by taking away the permissive to the appropriate laser(s) and/or the shutter.

3 System Requirements

The FSD Master shall meet the following requirements:

- Monitor the overall FSD signals from the CEBAF Injector, North Linac, South Linac, BSY, Hall A, Hall B, Hall C, Tagger, and Hall D
- Output permissive signals to the Master Laser, Hall A Laser, Hall B Laser, Hall C Laser, Hall D Laser, and the Shutter
- Include spare inputs and outputs for expandability
- Interface with EPICS
- Mask FSD inputs while in appropriate machine setups
- Detect a FSD fault and pull the appropriate permissive within 1 us

4 Required Interfaces

The FSD Master has functional interfaces with the following systems:

- FSD modules
- All systems connected to the FSD system/tree

5 References