

Telescope Control Cabinet Configuration Switches Design Note

Introduction

This document provides information on the configuration switches in the control cabinet for the Keck Outrigger Telescope project. This design note describes the location and use of the switches. This document has been configured as DN-T3795-1 and is a designated controlled document under the EOST Quality System.

Note: As a typed copy of the original document, many changes appear to have been made on Encoder Planar 0 for the Phoenix. These are as follows:

- S1-1 >> S1-5
- S1-2 >> S1-6
- S1-6 >> S1-2
- S1-7 >> S1-3
- S1-8 >> S1-4
- S1-3, S1-4 and S1-5 crossed out and obsolete.

References

The following documents are referenced in this design note:

[1] Telescope Control Computer Software Interface Control Document, Keck Outrigger Telescopes Project, 12 March 2002, ICD-T1683-4, EOS Technologies, Inc.

[2] MVME2300-Series VME Processor Module Installation and Use, 1998, V2300A/IH2, Motorola, Inc.

[3] Turbo PMAC-VME Hardware Reference Manual, November 1988, Preliminary, Delta Tau Data Systems, Inc.

[4] Accessory 24V – The PMAC-VME's Axis Expansion Card, 01 December 1991, 602226-100, Delta Tau Data Systems, Inc.

[5] VMIVME-2536 Optically-Coupled Digital I/O Board Instruction Manual, Document No. 500-002536-000 C, 10 May 1995, VME Microsystems International Corporation.

[6] bc635VME/bc350VXI Time and Frequency Processor User's Guide, Rev. B, 1997, 8500-0019, Datum Inc.

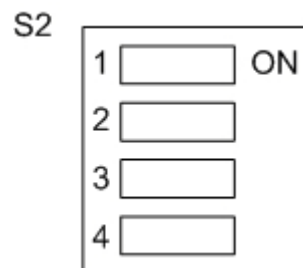
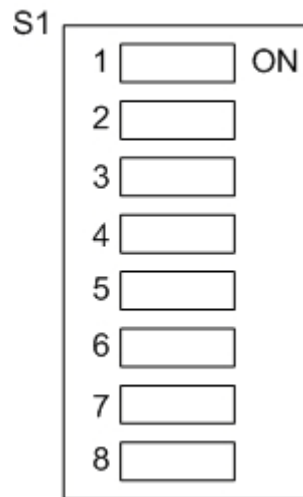
[7] System 10 User's Guidebook, November 1996, Pub. No. 10KM.10, Part No. 92095, Daytronic Corporation.

EOST Firmware

Each of the three planar subsystems in the telescope control cabinet includes a set of configuration switches. Due to interoperability of these planars, the uses of these switches depend on the versions of the firmware in all three planars. The information in this section is valid for ENCP0 Firmware version 1.1, ENCP1 Firmware version 1.0 and DIOP Firmware versions 1.4 and 1.5.

Encoder Planar 0

There are a total of 12 configuration switches for Encoder Planar 0, as shown in Figure 1. They are located on the outside rear of Encoder Planar 0 and are accessible by removing the upper back panel of the telescope control cabinet.



The switches are used as follows:

S1-1 Latch Faults

If S1-1 is set to the OFF position, fault signals in the DIOP will be latched, requiring that a DIOP Reset signal be issued either from the PMAC or from the Digital I/O Board (computer) interface in order to clear them [1]. Fault signals include failsafe limit switches, the emergency stop button, and mirror cover failsafe signals if mirror cover signals are enabled (see S1-3).

If S1-1 is set to the ON position, fault signals will clear automatically. The recommended setting for operation at the site is the OFF position.

S1-2 Power Enable

If S1-2 is set to the OFF position, power to the amplifiers must be enabled by issuing the Enable 24V Power and Enable 60V Power commands from the Digital I/O Board (computer) interface [1].

If S1-2 is set to the ON position, power to the amplifiers is always enabled, although they will still be disabled whenever a fault is detected. This allows the system to be used without an interface through the Digital I/O Board.

The recommended setting for operations at the site is the OFF position.

S1-3 Mirror Cover Control

If S1-3 is set to the OFF position, the mirror covers are controlled by the observatory control system, including correct sequencing and handling of the mirror cover failsafe limits.

If S1-3 is set to the ON position, the mirror covers are controlled by the firmware in the telescope control cabinet, using a separate Mirror Cover Handpaddle. The firmware ensures correct sequencing of the covers, including incorporation of the mirror cover failsafe limits into the general fault handling logic. (Specifically, if a mirror cover failsafe limit is reached the failsafe lamp is turned on and operation of the mirror covers is disabled unless overridden using the Failsafe Override switch on the front of the cabinet. Note that a mirror cover failsafe limit will cause a general fault preventing any axis of the telescope from being operated, but a telescope failsafe fault – such as an Azimuth failsafe limit – will not prevent operation of the mirror covers. This allows the mirror covers to be closed in the event that a telescope failsafe fault is triggered.)

The recommended setting for the operations at the site is the OFF position.

S1-4 Emergency Stop Switch

If S1-4 is set to the OFF position, the External E-Stop Output connector carries a signal to the observatory control system indicating when a failsafe fault has occurred and is not being overridden, or when the emergency stop signal has been received. This is designed for the normal situation where the observatory where the observatory control system provides the emergency stop signal to the telescope control system, and the telescope control system provides an indication whenever a fault has occurred which removes power from the amplifiers.

If S1-4 is set to the ON position, the External E-Stop Output connector carries a signal which only indicates when the emergency stop button has been pressed. This is designed for the situation when a local emergency stop button is connected directly to the External E-Stop connector such that the External E-Stop Output is used to light the lamp on the button. In this situation the observatory control system is not included in the emergency stop/fault logic.

The recommended setting for operations at the site is the OFF position.

S1-5 IRIG-B Input Select

If S1-5 is set to the OFF position, the IRIG-B timing signal sent to the VME timing card will be taken from ITIG-B Source 0.

If S1-5 is set to the ON position, the IRIG-B timing signal sent to the VME timing card will be taken from IRIG-B Source 1.

The recommended setting for operations at the site is the OFF position.

S1-6 10MHz Input Select

If S1-6 is set to the OFF position, the 1MHz timing signal used by the PMAC-VME card will be derived from the external 10MHz Source 0 signal (provided S1-8 is OFF).

If S1-6 is set to the ON position, the 1MHz timing signal used by the PMAC-VME card will be derived from the external 10MHz Source 1 signal (provided S1-8 is OFF).

The recommended setting for operations at the site is the OFF position.

S1-7 1PPS Input Select

If S1-7 is set to the OFF position, the 1PPS timing signal sent to the PMAC-VME card will be taken from the 1PPS Source 0 signal.

If S1-7 is set to the ON position, the 1PPS timing signal sent to the PMAC-VME card will be taken from the 1PPS Source 1 signal.

The recommended setting for operations at the site is the OFF position.

S1-8 10MHz External/On-Board Select

If S1-8 is set to the OFF position, the 1MHz timing signal used by the PMAC-VME card will be derived from one of the two external 10MHz signals, either Source 0 or Source 1 as selected by S1-6.

If S1-8 is set to the ON position, the 1MHz timing signal used by the PMAC-VME card will be derived from the on-board 10MHz oscillator, regardless of the setting on S1-6.

The recommended setting for operations at the site is the OFF position.

S2-1 Reserved

This switch is reserved for future use. It should be left in the OFF position.

S2-2 Reserved

This switch is reserved for future use. It should be left in the OFF position.

S2-3 Reserved

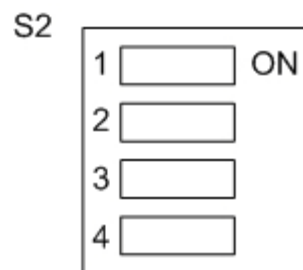
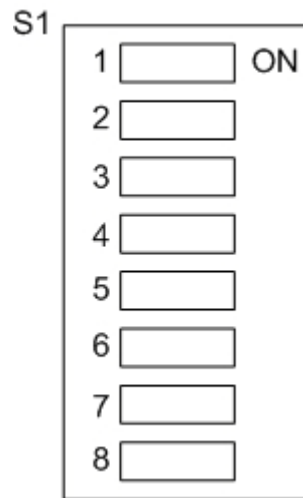
This switch is reserved for future use. It should be left in the OFF position.

S2-4 Reserved

This switch is reserved for future use. It should be left in the OFF position.

Encoder Planar 1

There are a total of 12 configuration switches for Encoder Planar 1, as shown in Figure 2. They are located on the outside rear of Encoder Planar 1 and are accessible by removing the upper back panel of the telescope control cabinet.



The switches are used as follows:

S1-1 Reserved

This switch is reserved for future use. It should be left in the OFF position.

S1-2 Reserved

This switch is reserved for future use. It should be left in the OFF position.

S1-3 Reserved

This switch is reserved for future use. It should be left in the OFF position.

S1-4 Reserved

This switch is reserved for future use. It should be left in the OFF position.

S1-5 Reserved

This switch is reserved for future use. It should be left in the OFF position.

S1-6 Reserved

This switch is reserved for future use. It should be left in the OFF position.

S1-7 Reserved

This switch is reserved for future use. It should be left in the OFF position.

S1-8 Reserved

This switch is reserved for future use. It should be left in the OFF position.

S2-1 Reserved

This switch is reserved for future use. It should be left in the OFF position.

S2-2 Reserved

This switch is reserved for future use. It should be left in the OFF position.

S2-3 Reserved

This switch is reserved for future use. It should be left in the OFF position.

S2-4 Reserved

This switch is reserved for future use. It should be left in the OFF position.

Digital I/O Planar

There are a total of 4 configuration switches for the Digital I/O Planar, as shown in Figure 2.3. They are located inside the Digital I/O Planar and are only accessible by completely removing it from the telescope control cabinet and removing its cover.



The switches are used as follows:

S1-1 Reserved

This switch is reserved for future use. It should be left in the OFF position.

S1-2 Reserved

This switch is reserved for future use. It should be left in the OFF position.

S1-3 Reserved

This switch is reserved for future use. It should be left in the OFF position.

S1-4 Reserved

This switch is reserved for future use. It should be left in the OFF position.

Other Subsystems

Configuration switches for other devices and subsystems in the Telescope Control Cabinet are described in their respective manuals. See the References section for details [2-7].

Changes

Switch	Original	Final (Note changed definitions)
S1-1	OFF	OFF
S1-2	OFF	OFF
S1-3	OFF	OFF
S1-4	ON	OFF
S1-5	ON	ON
S1-6	ON	ON
S1-7	OFF	OFF
S1-8	OFF	OFF