

INPUTS to TCS

FOCUS FROM TCS

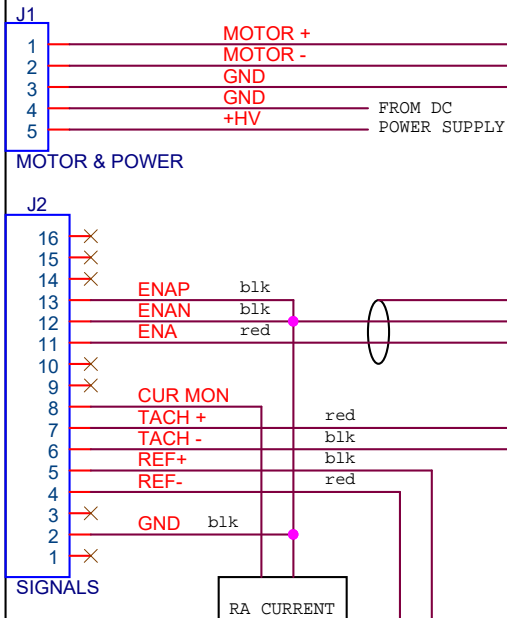
THIS DRAWING HAS NOT BEEN COMPLETELY CHECKED

Super-LOTIS TELESCOPE		
Title	TELESCOPE DRIVE BOX	
Size	Document Number	Rev
C	KPSI_TIB_blk.pdf	A
Date:	Monday, April 03, 2017	Sheet 1 of 1

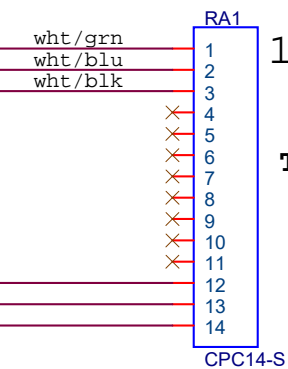
75 VDC POWER SUPPLY  
 SERVO AMP PST-075-10  
 FILTER 07-00078-000

+HV HV DC FOR  
 GND SERVO AMPS

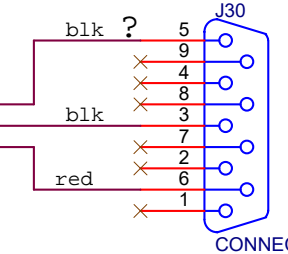
**RA DRIVE**  
 COPLEY 412  
 SERVO  
 AMPLIFIERS &  
 POWER SUPPLY



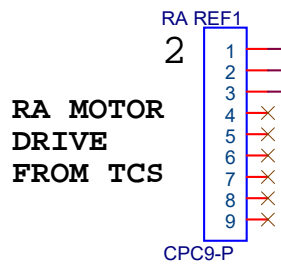
LINE  
 CONDITIONED



TO RA DRIVE MOTOR

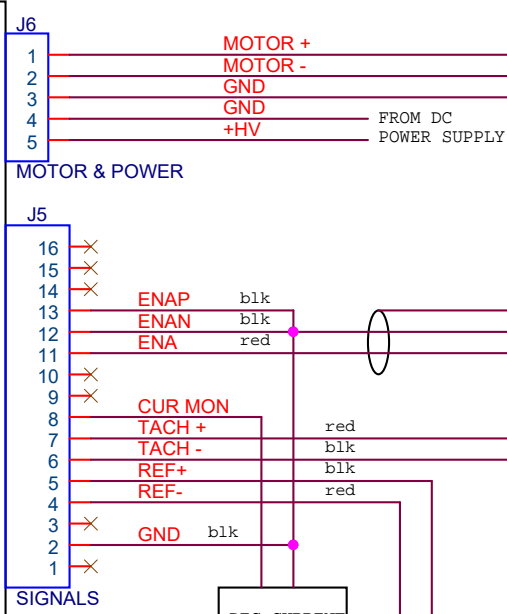


FROM OPJ168

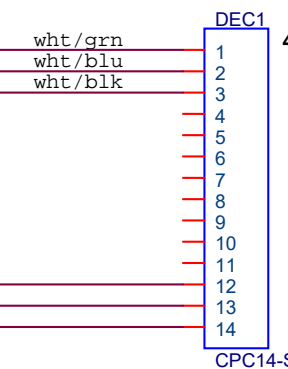


RA MOTOR  
 DRIVE  
 FROM TCS

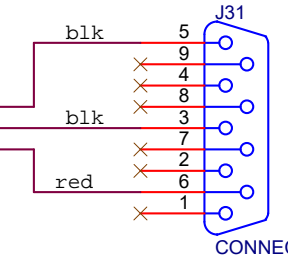
**DEC DRIVE**  
 COPLEY 412  
 SERVO  
 AMPLIFIERS &  
 POWER SUPPLY



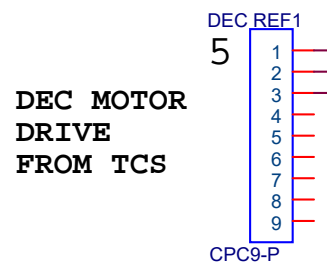
LINE  
 CONDITIONED



TO DEC DRIVE MOTOR



FROM OPJ169



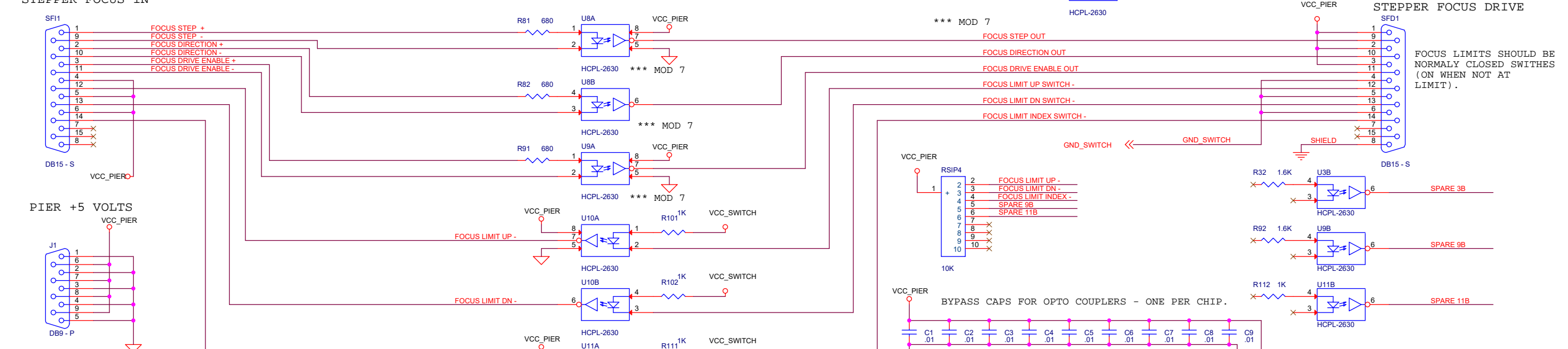
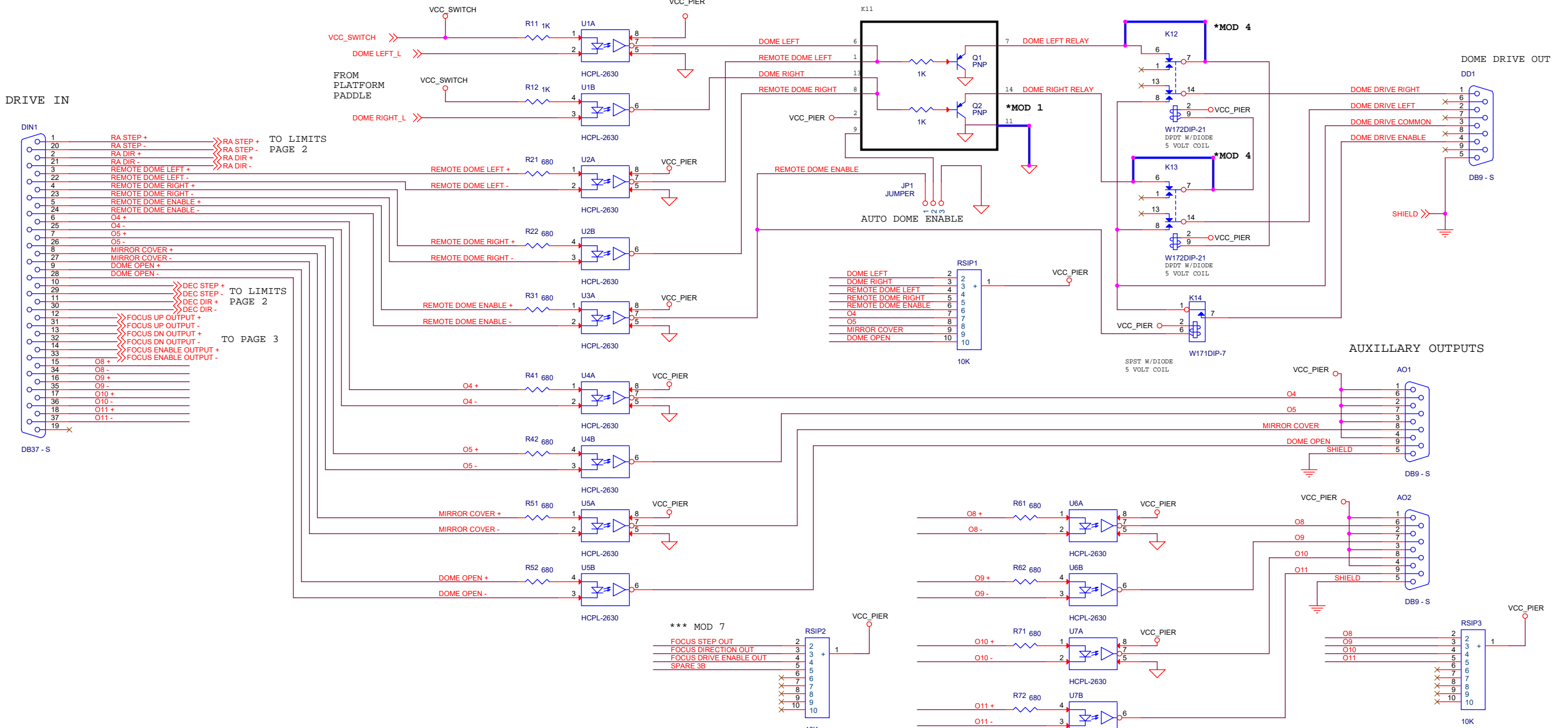
DEC MOTOR  
 DRIVE  
 FROM TCS

CONNECTOR:  
 HOUSING: 22-01-3167  
 PINS 08-50-0114

THIS DRAWING HAS NOT BEEN  
 COMPLETELY CHECKED

Title <b>SUPERLOTIS TELESCOPE</b>		
Size B	Document Number <b>TELESCOPE DRIVE BOX</b>	Rev A
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PADDLE OR AUTO DOME SELECT



**SMALL TELESCOPE INTERFACE**

Title: TELESCOPE INTERFACE BOARD  
 INPUTS DOME AND STEPPER FOCUS

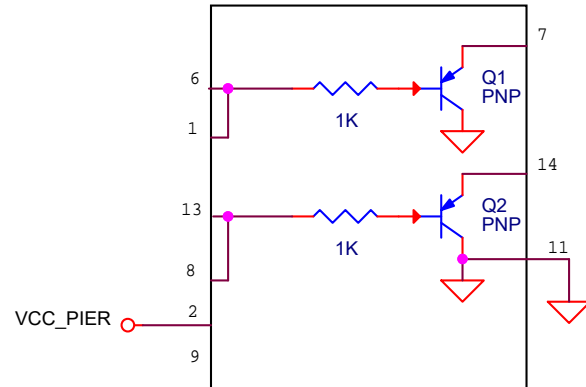
Size C	Document Number tcs_sti_tib1.pdf	Rev R1M
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### \*\*\* MOD 1

USE TRANSISTORS FOR MORE  
RELAY CURRENT DRIVE

K11, K32



- 1) ADD GROUND TO K11-11 AND K32-11 ON TIB (PIER GND NOT PADDLE GND).
- 2) REPLACE RELAY IN K11 AND K32 WITH HEADER.

### \*\*\* MOD 2

PROBLEM WITH 2 DIFFERENT RUNS  
BEING CALLED "FOCUS F/S" CAUSE  
BOTH TO BE TIED TOGETHER.

- 1) CUT TRACE BETWEEN PINS 1 & 6 ON K31 (CUT IT AT PIN 6).
- 2) FOLLOW TRACE FROM PIN 6 TO FIRST VIA/FEEDTHRU.  
CUT TRACE ON BOTH SIDES.
- 3) JUMPER BETWEEN THE CUT TRACE LEAVING VIA DISCONNECTED.
- 4) PLACE JUMPER BETWEEN PIN 1 AND VIA.
- 5) CHANGE NAME OF OUTPUT SIGNAL TO  
"FOCUS DRIVE F/S" ON DRAWING.

### \*\*\* MOD 3

ADD REMOTE FOCUS F/S TO BOARD. RENAME  
SIGNALS AS SHOWN.

- 1) ADD WIRE FROM U41-7 TO K31-6. MAKE MODS ON BACK OF  
CIRCUIT BOARD.
- 2) CHANGE " FOCUS ENABLE OUTPUT +" TO "FOCUS F/S OUTPUT +"
- 3) CHANGE " FOCUS ENABLE OUTPUT -" TO "FOCUS F/S OUTPUT -"
- 4) CHANGE " FOCUS ENABLE OUTPUT" TO "FOCUS F/S OUTPUT"

### \*\*\* MOD4

A FIX FOR DOME RUNAWAY AT BOOT  
UP. DEFEATS DOME LEFT-RIGHT  
INTERLOCK TO LET ABB DRIVE SEE  
BOTH RIGHT AND LEFT COMMANDS.

- 1) ADD JUMPER BETWEEN K12 PIN 6 AND 7 (SHT 1)
- 2) ADD JUMPER BETWEEN K13 PIN 6 AND 7 (SHT 1)

### \*\*\* MOD5

MODIFY THE RA INDEX INPUT TO  
ACCOMMODATE THE DIFFERENTIAL  
SIGNAL FROM AN ENCODER.

- 1) REMOVE R351 AND REPLACE WITH 680 OHM SURFACE  
MOUNT RESISTOR.
- 2) REMOVE VCC\_SWITCH FROM R351 BY CUTTING THE POWER  
TRACE ON EACH SIDE OF THE R351 VIA ON THE BACK OF THE  
BOARD. JUMPER VCC\_SWITCH AROUND THE VIA .
- 3) REMOVE VCC\_SWITCH FROM PIN 7 OF HS&RA1  
BY CUTTING TRACE ON BACK OF BOARD.
- 4) ATTACH WIRE FROM R351'S VIA  
TO PIN 7 OF HS&RA1 CONNECTOR.

### \*\*\* MOD6

- 1) FIX SIGNAL SWAP ON LIMIT SIGNAL LINES TO CIB.  
MORE LATER...

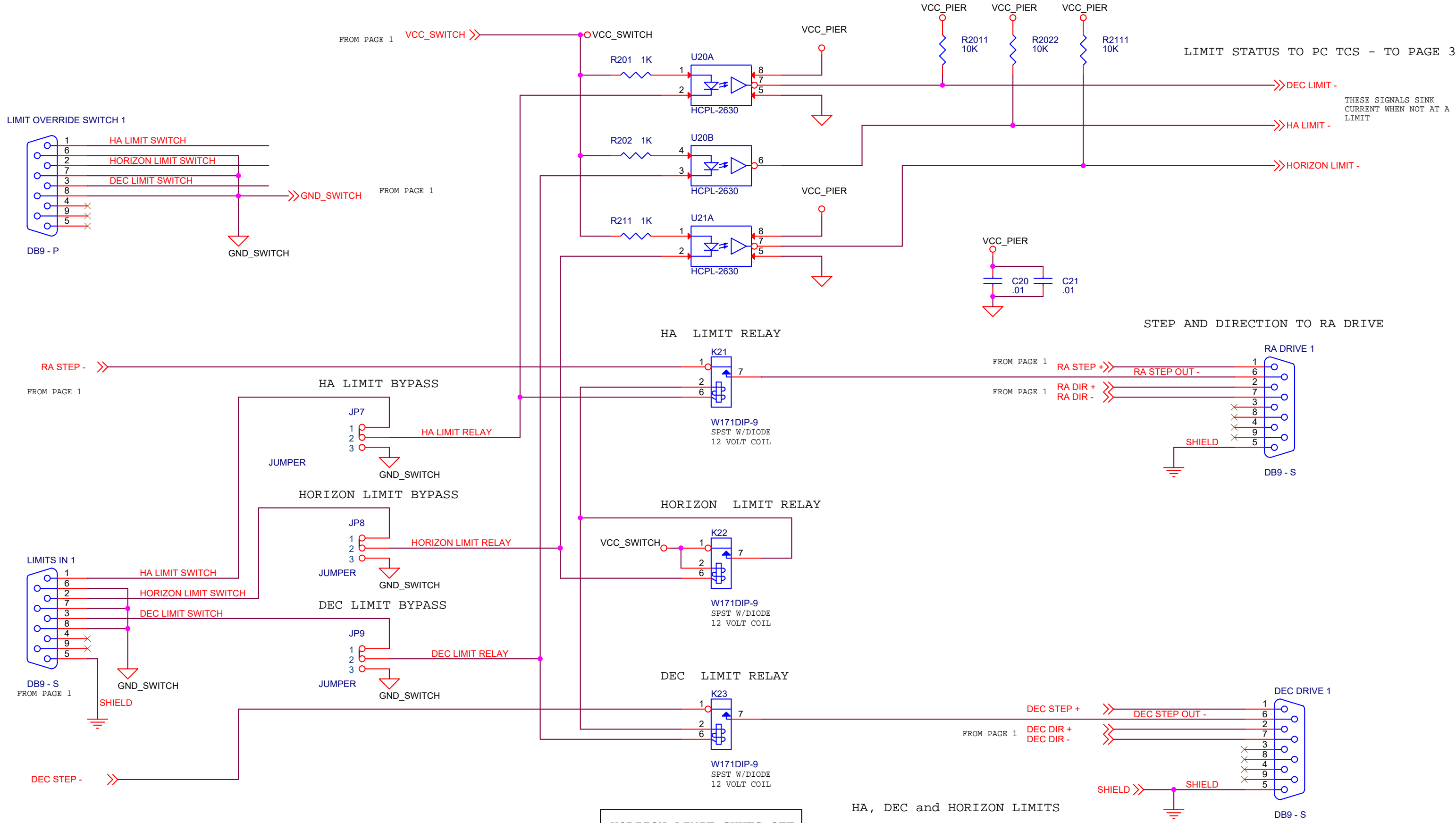
### \*\*\* MOD 7

NAMES FOCUS STEP - & FOCUS DIRECTION - ARE  
ASSIGNED TO MORE THAN ONE NODE. OUTPUT SIGNAL  
NAMES ARE CHANGED TO FOCUS STEP OUT & FOCUS  
DIRECTION OUT.

- 1) TRACES CONNECTING U8-2 & U8-7, U8-3 &  
U8-6 AND U9-2 & U9-7 WERE CUT TO MAKE NODES  
UNIQUE.

## SMALL TELESCOPE INTERFACE

Title		
TELESCOPE ISOLATION BOARD - MODS TO R1 BOARD		
Size	Document Number	Rev
B	tcs_sti_tib_r1mods.pdf	A
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LIMIT STATUS TO PC TCS - TO PAGE 3

THESE SIGNALS SINK CURRENT WHEN NOT AT A LIMIT

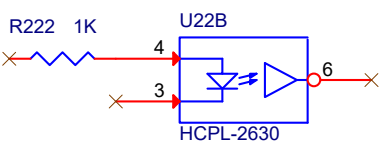
STEP AND DIRECTION TO RA DRIVE

FROM PAGE 1 RA STEP +  
FROM PAGE 1 RA DIR +  
RA DIR -

FROM PAGE 1 DEC STEP +  
DEC DIR +  
DEC DIR -

HORIZON LIMIT SHUTS OFF BOTH HA AND DEC RELAYS.

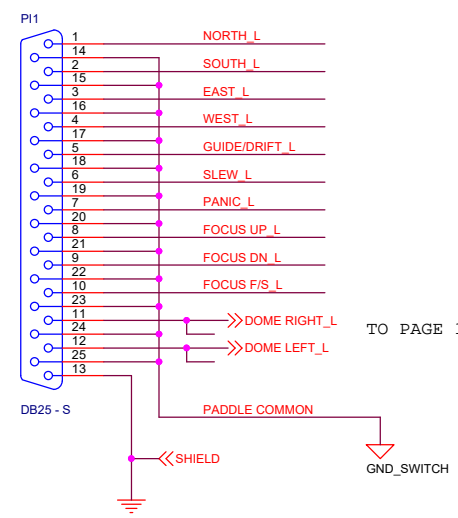
HA, DEC and HORIZON LIMITS



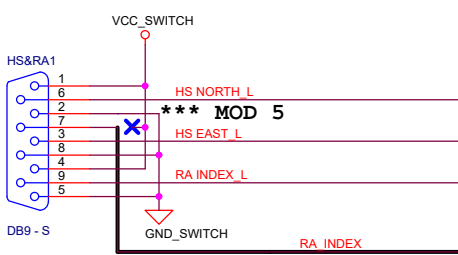
**SMALL TELESCOPE INTERFACE**

Title TELESCOPE INTERFACE BOARD STEP AND DIRECTION TO DEC DRIVE		
Size B	Document Number tcs_tib_sht2.pdf	Rev 1m
Date: Monday, April 03, 2017	Sheet 2 of 3	

**PADDLE INPUT**



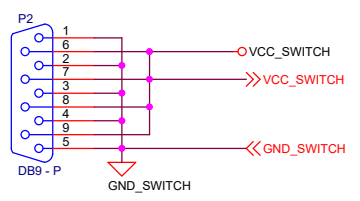
**HARD STOW AND RA INDEX INPUTS**



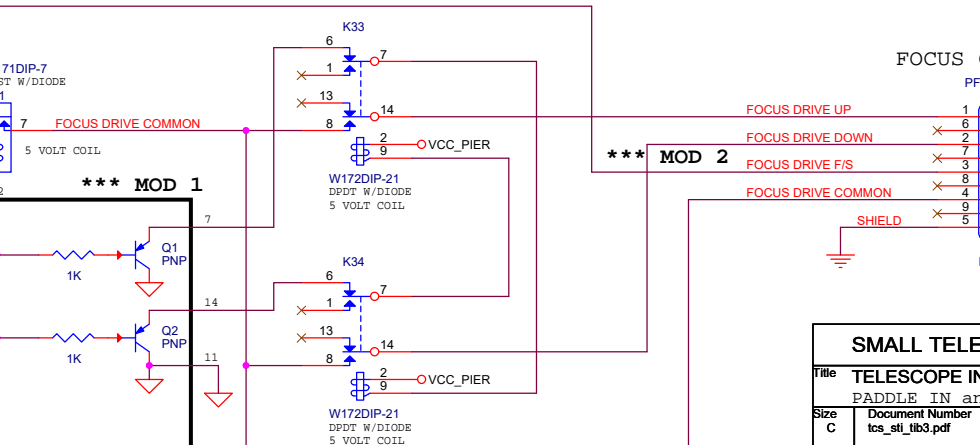
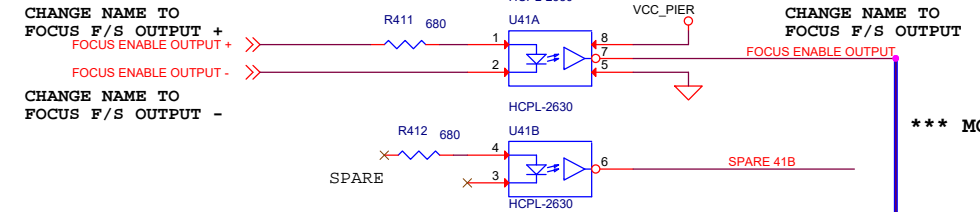
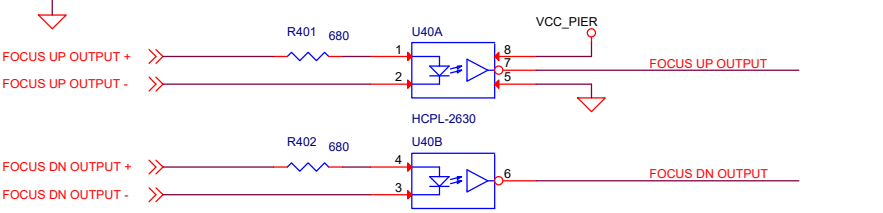
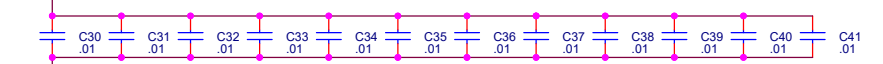
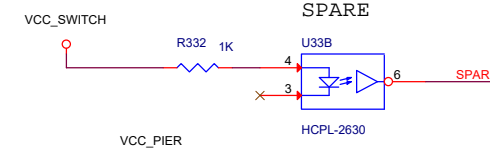
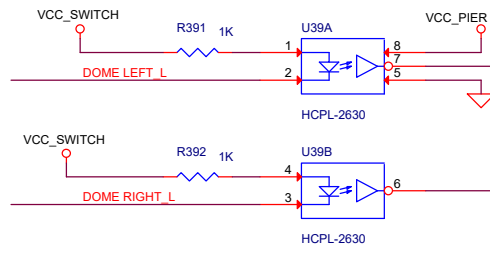
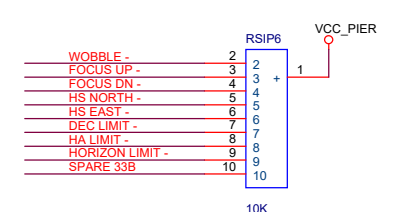
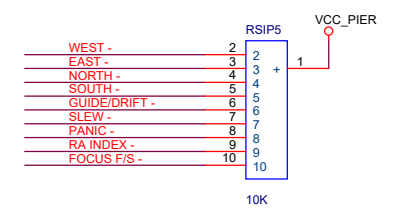
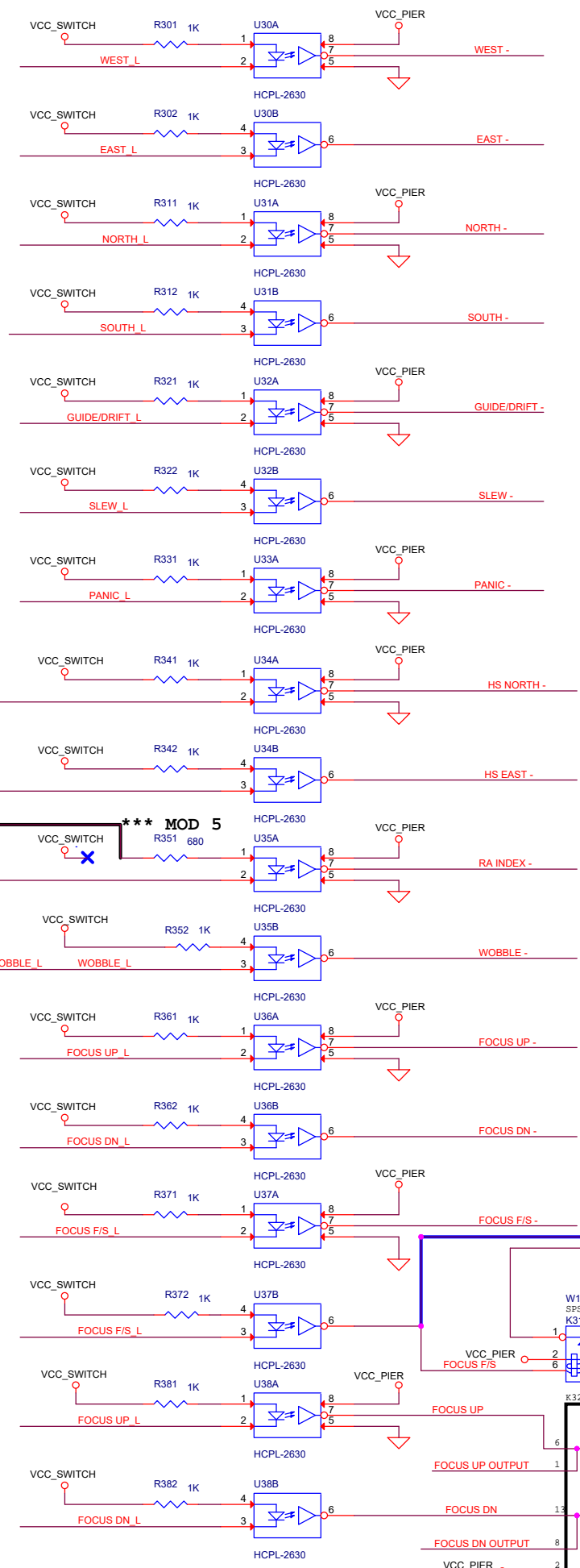
**CHASSIS GROUND FOR CABLE SHIELDS**



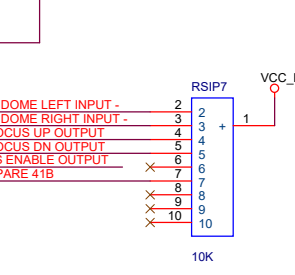
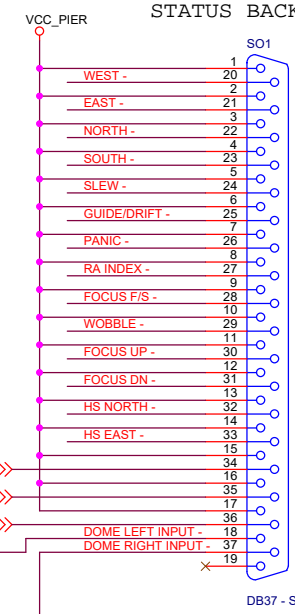
**+12 VOLT SWITCH POWER FOR PADDLE, LIMITS ETC.**



FROM FOCUS BUTTONS ON PADDLE



**STATUS BACK TO TCS PC**



**FOCUS OUT FOR DC MOTOR DRIVE**

FOCUS UP and DOWN ARE ISOLATED SWITCH CLOSURES. 24 VOLTS @ 1 AMP MAX.

SMALL TELESCOPE INTERFACE			
Title TELESCOPE INTERFACE BOARD			
PADDLE IN and STATUS OUT			
Size C	Document Number tcs_sti_tib3.pdf	Rev 1M	
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