

TESS Observatory Console

Visual User Instruction Manual

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Mission Console Purpose

The TESS Observatory Console gives authorized Planetary Defense Foundation operators a safe, single-page control station for roof movement, ASIAIR/ZWO telemetry, direct INDI/EQMod mount state, live camera checks, emergency relay stop, and the Relay 3 red LED light.

SAFE ROOF CONTROL

HOME/PARK verified before OPEN or CLOSE

MOUNT SAFETY

INDI/EQMod PARKED, tracking OFF, motion IDLE

EMERGENCY STOP

STOP / ALL RELAYS OFF interrupts active roof motion

NIGHT OPERATIONS

Relay 3 controls the red LED light

Credential Rule

- ✓ This manual intentionally does NOT print passwords, keys, tokens, or private connection strings.
- ✓ Override buttons use the dedicated OBSERVATORY CONTROL PASSWORD field only.
- ✓ The VNC/console password is separate from the Observatory Control Password.

1. Console Layout Map

Clean overview of the current TESS Observatory Console.

ZWO - ASI AIR PRO Controller

A

Read-only telemetry: Direct INDI/EQMod, PARK, TRACKING, MOTION, camera/mount status.

ENTER : TESS OBSERVATORY CONSOLE

B

Separate VNC/noVNC console entry. This uses the VNC password, not the override password.

TESS - OBSERVATORY LIVE CAMERA

C

Visual roof confirmation. Check before, during, and after roof movement.

TESS - OBSERVATORY OVERRIDE COMMANDS

D

Protected hardware commands. Requires OBSERVATORY CONTROL PASSWORD.

Roof Safety Status Strip

PARK
PARKED

TRACKING
OFF

MOTION N/S
IDLE

MOTION E/W
IDLE

ESP32 HOME
HOME

OPEN/CLOSE are allowed only when every safe-status item is verified by the page and by the backend hard gate.

Override Command Button Order

OPEN

CLOSE

INDI UNPARK

INDI PARK/HOME

START

STOP

INDI STOP

LIGHT OFF

MPC EMAIL

2. Visual Cues and Status Colors

Large readable cues with text kept inside the boxes.

GREEN

Safe, active, or confirmed. Example: PARKED/HOME confirmed or LIGHT ON.

RED

Inactive, off, blocked, or emergency stop. Example: LIGHT OFF or STOP.

CYAN

Read-only telemetry and information from ASI/AIR / INDI / EQMod.

YELLOW

Caution: check conditions before continuing.

OPEN / CLOSE Must Show This Safe Set

PARK
PARKED

TRACKING
OFF

MOTION N/S
IDLE

MOTION E/W
IDLE

ESP32 HOME
HOME

If any one item is missing, wrong, or stale, roof OPEN/CLOSE must be blocked. The server also verifies Direct INDI/EQMod and ESP32 HOME before launching roof movement.

Button State Cue

SELECTED / ACTIVE

INACTIVE / OFF

When one control is activated it turns GREEN; other control options return RED. OPEN OBSERVATORY and CLOSE OBSERVATORY return RED after the approximately 100 second verification/status window completes.

3. Override Command Cards

Protected commands in the TESS - Observatory Override Commands panel.

OPEN OBSERVATORY

Opens roof. Requires PARKED/HOME, tracking OFF, motion IDLE, ESP32 HOME, live camera clear.

CLOSE OBSERVATORY

Closes roof. Park/home the mount first, verify camera and status, then close.

INDI UNPARK

Unparks the EQMod mount so ASIAIR/manual arrows can move when safe.

INDI PARK/HOME

Returns mount to calibrated HOME/PARK. Use before closing roof or ending session.

START / ALL RELAYS ON

Clears STOP lockout / re-enables protected controls after safety review.

STOP / ALL RELAYS OFF

Emergency interrupt. Stops active roof movement and forces relays OFF.

IF IN DOUBT: PRESS THIS.

DIRECT INDI STOP

Stops direct INDI/EQMod mount motion. Separate from roof relay STOP.

LIGHT ON / LIGHT OFF

Relay 3 / D9 red LED. ON is green; OFF is red. Roof relays stay OFF.

EMAIL : MINOR PLANET CENTER

Opens the MPC reporting notice with Guide to Minor Body Astrometry plus mpc@cfa.harvard.edu and obs@cfa.harvard.edu links.

4. Standard Operating Flows

Follow the sequence. Do not skip verification.

OPENING SESSION

- 1 Check weather and sky camera.
- 2 Verify live roof camera is clear.
- 3 Confirm PARKED/HOME, tracking OFF, motion IDLE, ESP32 HOME.
- 4 Enter Observatory Control Password.
- 5 Press OPEN OBSERVATORY and watch 100s movement.
- 6 If anything looks wrong press STOP / ALL RELAYS OFF.

CLOSING SESSION

- 1 Stop imaging/mount motion.
- 2 Press INDI PARK/HOME and wait for PARKED/HOME.
- 3 Confirm ESP32 HOME and live camera clear.
- 4 Enter Observatory Control Password.
- 5 Press CLOSE OBSERVATORY and watch movement.
- 6 Confirm roof idle and relays OFF.

Emergency Rule

STOP / ALL RELAYS OFF

Use immediately for wrong command, obstruction, unexpected movement, or loss of confidence.

Expected result: active roof sequence is interrupted, relays forced OFF, controller returns idle.

5. Relay 3 Red LED Wiring Cue

12V DC LED system with 3A inline fuse.

Recommended DC Wiring



+12V → 3A fuse → Relay 3 COM → Relay 3 NO → LED +

LED - → 12V supply negative / 0V

- ⚠ Use supply +12V and 0V terminals — not reversing actuator motor leads.
- ⚠ Keep the 3A fuse close to the +12V source.
- ⚠ Relay contacts COM and NO switch the LED positive line.
- ⚠ Confirm actuator current plus LED current stays under the 5A supply rating with margin.
- ⚠ If actuator can draw near 5A alone, use a separate or larger properly rated 12V supply.

6. Email Sign-In and Registration

Newest account workflow for TESS Observatory Console access.

Sign-In Box Layout

- ✓ Use your Planetary Defense Foundation email address and email password to enter the TESS Observatory Console.
- ✓ The ENTER : TESS OBSERVATORY CONSOLE button appears above REGISTER and FORGOT PASSWORD.
- ✓ The VNC password is separate, hidden server-side, and is never reused as the email password.

REGISTER Workflow — Victor Approval Required

- 1 Applicant clicks REGISTER and submits full name, requested @planetarydefensefoundation.net address, contact email, and reason.
- 2 The website stores the request as PENDING and emails Victor at victor@planetarydefensefoundation.net.
- 3 Victor clicks APPROVE or DENY from the approval email.
- 4 APPROVE creates the VM122/Mailcow mailbox. DENY records the denial and creates no account.

Secure Service Mailbox

- 📧 tess-register@planetarydefensefoundation.net is the authenticated service mailbox used only to send registration approval notices.
- 📧 Its password is strong, rotated, stored server-side only, and protected as root-readable secret files on the web origins.
- 📧 Do not delete or disable this mailbox unless the registration sender is replaced and tested.

Forgot Password

FORGOT PASSWORD opens an operator email request for Planetary Defense Foundation email password assistance. Account recovery remains an admin-approved mail operation, not an automatic public reset.

7. Troubleshooting Quick Reference

Read the message, verify status, then act.

OPEN/CLOSE blocked

Check PARKED, tracking OFF, motion IDLE, ESP32 HOME. Press INDI PARK/HOME if needed.

ASIAIR arrows do not move

Mount may be PARKED. Use INDI UNPARK only when roof and mount are safe.

Roof keeps moving / wrong command

Press STOP / ALL RELAYS OFF immediately and verify live camera.

LED does not turn on

Check Observatory Control Password, Relay 3/D9, inline fuse, +12V, and LED polarity.

Minor Planet Center reporting

Use EMAIL : MINOR PLANET CENTER. Format observations exactly per Guide to Minor Body Astrometry before emailing MPC.

Sky camera offline

Do not assume weather is safe. Verify conditions by other sources before opening.

Console password works but overrides fail

Use OBSERVATORY CONTROL PASSWORD field; VNC password is separate.

Register approval email missing

Approval notices are sent by authenticated tess-register@planetarydefensefoundation.net to Victor. Check Victor inbox and Mailcow delivery logs.

Approve link shows error

Verify link is current, request is pending, and approval URL reaches the primary registration database.

7. One-Page Operator Checklist

Print or keep this page visible during operations.



Before OPEN

Weather safe; live camera clear; PARKED/HOME; tracking OFF; motion IDLE; ESP32 HOME.



Before CLOSE

Imaging stopped; mount INDI PARK/HOME; ESP32 HOME; roof path clear.



During roof movement

Watch live camera for the full movement. Buttons return red after verification window.



Emergency

STOP / ALL RELAYS OFF interrupts roof movement and forces relays OFF.



Mount movement

INDI UNPARK before manual arrows; INDI PARK/HOME before closing.



Red LED

LIGHT OFF button toggles to LIGHT ON green. LIGHT ON toggles back to LIGHT OFF red.



MPC Email

EMAIL : MINOR PLANET CENTER opens reporting guidance and astrometry submission links.



Passwords

Email password, hidden VNC password, and Observatory Control Password are separate. Never share credentials.



Registration

REGISTER submits a Victor-approved email account request. FORGOT PASSWORD opens password-help email.

Mission posture: safe controls first, then asteroid/comet discovery operations.