

TSRI 微縮光阻處理系統 CLEAN TRACK ACT™ 8Z 新手圖解操作手冊 | 雙語版

Beginner-Friendly Illustrated Operation Manual | Enterprise Bilingual Edition



Version 2 | For Training / Operation Reference | TSRI Internal Use

文件資訊 | Document Control

文件名稱 / Title	TSRI 微縮光阻處理系統 ACT 8Z 新手圖解操作手冊 Enterprise Bilingual Edition
版本 / Version	v2
用途 / Purpose	新進人員訓練、現場操作複習、交接與內部稽核輔助。 / New operator training, on-site quick reference, handover, and internal audit support.
適用設備 / Equipment	L33 / CLEAN TRACK ACT™ 8Z Coater / Developer
重要聲明 / Notice	本手冊為新手友善圖解版，實際操作仍須遵守 TSRI 規範、原廠手冊、SOP 與現場工程師指示。 / This guide supplements, but does not replace, official SOPs, vendor manuals, and engineer instructions.

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新手使用方式 | How to use this guide

先看第 1 章流程圖，再依第 4 章檢查表確認設備、晶舟、晶圓與治具；實際操作時搭配第 5 章標準步驟與第 9 章警報處置。

Start with Chapter 1, then use Chapter 4 as the pre-check. During operation, follow Chapter 5 and refer to Chapter 9 when alarms occur.

1. 一頁式新手流程圖 | One-page beginner workflow

ACT 8Z 的新手操作可簡化為「確認狀態 → 檢查晶圓 / 治具 → 載入配方 → 啟動 Run 貨 → 監控狀態 → 完成取件」。任何異常須先停止蜂鳴、暫停搬送並通知工程師。

For beginners, ACT 8Z operation can be simplified as: check status, inspect wafers/jigs, load the recipe, start processing, monitor status, and unload after completion. For abnormalities, stop the buzzer, pause transfer, and notify the engineer.

01

確認設備狀況**Check tool status**

狀況牌為 RUN，主畫面無重大 Alarm。

RUN status card; no critical alarm on the main screen.

02

確認晶圓 / 治具**Inspect wafers / jigs**

晶圓無破損、晶背潔淨；破片治具間隔放。

No breakage; backside clean; chip jigs placed with spacing.

03

登入與選擇配方**Login and select recipe**

確認使用者與 Wafer Flow

Recipe。

Confirm user and wafer-flow recipe.

04

上片與啟動**Load and start**

晶舟定位後按壓前端確認貼合；晶圓須到底，6 吋平邊對齊 cassette 開口前緣。

Seat cassette fully; wafers fully seated; align the 6-inch flat with the cassette opening front edge.

05

監控製程**Monitor process**

觀察 Status、燈號與 Alarm 區。

Monitor Status screen, LEDs, and alarm area.

06

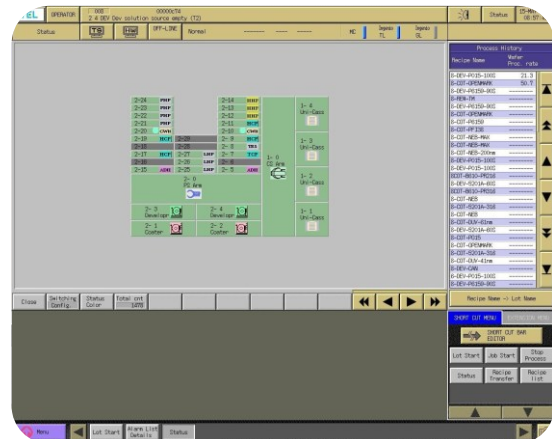
完成與取件**Complete and unload**

FINISHED 亮起後取件並記錄。

Unload after FINISHED lights up and record if needed.



設備整體外觀：確認主機與操作面板位置。 / Tool overview: locate the main system and operating panel.



觸控主畫面：用於監控系統狀態。 / Main touch screen: used to monitor system status.

2. 安全總覽與現場規則 | Safety overview and site rules

核心原則 | Core principle

所有操作必須由受訓且被授權人員執行。新手不得獨立處理警報、維護模式、Interlock、化學品更換或 EMO 復歸後晶圓回收。

Only trained and authorized personnel may operate the tool. Beginners must not independently handle alarms, maintenance mode, interlocks, chemical replacement, or wafer recovery after EMO.

PPE 個人防護 / PPE	護目鏡、手套、無塵衣與必要面罩需依現場規範使用。 / Wear goggles, gloves, cleanroom garments, and face protection according to site rules.		
EMO 緊急停止 / EMO	僅限火災、嚴重洩漏、人員受傷、觸電或嚴重碰撞等緊急狀況。 / Use only for fire, major leak, injury, electric shock, or severe collision.		
ARM PAUSE 搬送停止 / Transfer pause	發現搬送異常或需暫停手臂動作時使用，並立即通知工程師。 / Use when transfer abnormality is suspected; notify the engineer immediately.		
化學風險 / Chemical hazards	處理 HMDS、溶劑、顯影液等相關作業需依 SDS 與現場規範。 / Follow SDS and site rules when handling HMDS, solvent, developer, and related chemicals.		
機械風險 / Mechanical hazards	手臂運作中嚴禁伸手進入機構區域。 / Do not place hands inside moving mechanisms while arms are active.		
			
EMO 緊急停止按鈕：僅限緊急狀況。 / EMO emergency stop button: emergency use only.			
ARM PAUSE 搬送停止按鈕：暫停相關手臂。 / ARM PAUSE button: pauses the corresponding robot arm.			
	局部控制面板：含 ARM PAUSE、SPIN STOP 與壓力顯示。 / Local control panel: ARM PAUSE, SPIN STOP, and pressure indicators.		

2.1 不可做事項 / Do-not list

- 正常製程中不可任意按 EMO。 / Do not press EMO during normal processing.
- 不可用手指或硬物重壓觸控面板，應使用專用觸控筆。 / Do not press the touch panel with fingers or hard objects; use the dedicated stylus.
- 不可混用塗佈治具與顯影治具。 / Do not mix coating jigs and developing jigs.
- 不可在未確認晶圓完整與晶背潔淨前上片。 / Do not load wafers before confirming integrity and backside cleanliness.

2.2 設備損壞防範 | Equipment Damage Prevention

未依標準作業程序操作，可能造成機械碰撞、螢幕破損、管路破損、線路短路或機構變形。一般操作員應避免下列高風險動作；涉及維護、Interlock、Brake Release、Cup 校正或 E.BOX / 外蓋拆裝，僅限授權工程人員。

Failure to follow the SOP may cause mechanical collisions, display damage, tubing damage, electrical short circuits, or mechanical deformation. Operators must avoid the following high-risk actions. Maintenance, interlock, brake-release, cup-calibration, and E.BOX/cover work are restricted to authorized engineering personnel.

類別 Category	不當動作 Improper Action	可能造成的設備損壞 Potential Damage
晶圓與治具 Wafer & Jig	破損 / 缺角晶圓上機；晶圓斜插、疊片或晶舟偏斜；晶背髒污；COT/DEV 治具混用或錯放。 Loading damaged wafers; slanted/stacked wafers or mis-seated cassette; dirty backside; mixed/incorrect COT/DEV jigs.	晶圓破裂與碎片飛散、手臂 / 杯體碰撞、吸盤污染、電纜或管路受損。 Wafer breakage/debris, robot or cup collision, chuck contamination, cable/tubing damage.
人機介面與按鈕 HMI & Controls	以手指、手套硬角或尖銳硬物重壓觸控螢幕；非緊急狀況按 EMO；未確認原因即 Clear Alarm。 Pressing the touch screen with fingers/hard objects; using EMO for non-emergencies; clearing alarms without identifying the cause.	LCD / 觸控失效；硬性停止後不當復歸可能造成二次碰撞；故障擴大。 Display/touch failure; secondary collision after improper recovery; escalation of faults.
機械與維護 Mechanical & Maintenance	手臂通電時操作 Brake Release Tool；未移開電纜即轉動 θ 軸；運轉中伸手入機構區；拉扯噴嘴前端；夾擠電纜 / 管路；碰觸 Cup 後未檢查高度。 Improper brake-release use, rotating θ -axis with cable attached, reaching into moving areas, pulling nozzle tips, pinching cables/tubing, or failing to verify cup height.	手臂 / 噴嘴變形、接頭或線路拉斷、漏氣 / 漏液、Cup 與晶圓干涉或碰撞。 Robot/nozzle deformation, cable/connector damage, leaks, cup-to-wafer interference or collision.
化學與廢液 Chemical & Waste	廢液桶未連接或已滿仍執行 Dummy Dispense / 測試。 Running dummy dispense/test with the waste container disconnected or full.	化學液外溢，腐蝕底座、傳動機構或電控元件。 Chemical overflow and corrosion of the base, mechanisms, or electronics.
安全互鎖 Interlock	未經授權擅自 Bypass / Defeat Interlock。 Unauthorized bypass or defeat of an interlock.	防護失效、外物干涉、嚴重機械碰撞及人員安全風險。 Loss of safeguarding, foreign-object interference, severe collision, and personnel risk.

⚠ 看到紅色警報、異常位置不明或設備狀態不確定時，不猜測、不強制復歸、不自行解除 Interlock；先停止相關動作並通知工程師。

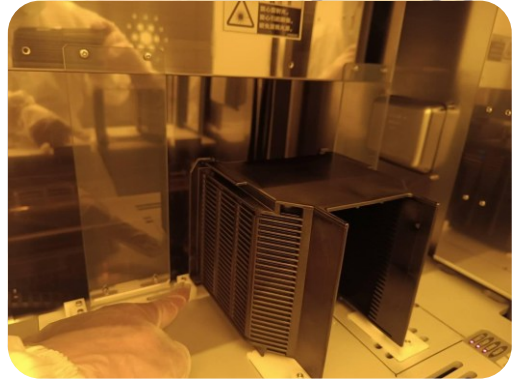
If a red alarm appears, the abnormal position is unknown, or tool status is uncertain: do not guess, force recovery, or defeat interlocks. Stop the relevant motion and notify the engineer.

3. 設備外觀與重要按鈕 | Equipment overview and critical controls

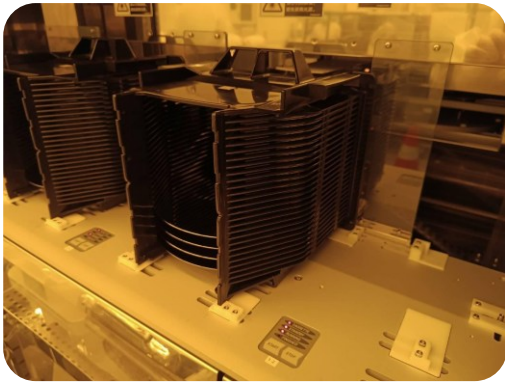
新手上機前應先熟悉設備正面、主操作面板、載台按鈕、EMO、ARM PAUSE、Spin Stop 與狀況牌位置。	Before operating the tool, beginners should identify the equipment front, main panel, stage buttons, EMO, ARM PAUSE, Spin Stop, and status cards.
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ACT 8Z 設備正面與操作面板。 / Front view and main operating panel.



6 吋晶舟 / 載台區域 (1-3、1-4)。 / 6-inch cassette / stage area.



8 吋晶舟 / 載台區域 (1-1、1-2)。 / 8-inch cassette / stage area.



PRB 局部控制面板。 / PRB local operating panel.

3.1 現場按鈕與燈號快速對照 / Quick reference for buttons and LEDs

項目 Item	中文說明 Chinese	English	新手判斷 Beginner cue
CASSETTE	晶舟已放上載台。	Cassette is placed on the stage.	亮起表示偵測到晶舟 / On means cassette detected.
STANDBY	待命或等待開始。	Standby or waiting to start.	閃爍或亮燈需依 SOP 判讀 / Interpret per SOP.
RUNNING	製程或 Mapping 進行中。	Processing or mapping is in progress.	不可取件 / Do not unload.
FINISHED	製程完成。	Processing completed.	可依 SOP 取件 / Unload according to SOP.
START / STOP	載台開始或停止送片。	Start or stop wafer transfer.	新手不可任意按 STOP / Do not press STOP casually.
ARM PAUSE	暫停手臂搬送。	Pause robot arm transfer.	異常時先暫停再通報 / Pause and notify.
EMO	緊急停止。	Emergency off.	僅限緊急狀況 / Emergency use only.

4. 操作前檢查 | Pre-operation checklist

上機前 60 秒檢查 | 60-second pre-check

狀況牌、Alarm、晶舟、晶圓 / 破片、治具、配方、PPE 六項都確認後再開始。

Before starting, verify status card, alarms, cassette, wafers/chips, jigs, recipe, and PPE.

確認項目 Check item	OK 標準 OK criteria	NG 風險 Risk	簽核 Sign
設備狀況牌 / Tool status card	RUN / 正常	DOWN、維修中或狀態不明 / Down or unknown	☐
主畫面 / Main screen	Ready or no critical Alarm	紅色 Alarm 未處理 / Red alarm active	☐
晶圓、晶背與放置 Wafer, backside & placement	無破損、晶背潔淨；晶舟前端貼合定位點且無翹起；晶圓完全到底、	晶舟翹起可能造成晶圓檢測位置錯位及洗邊異常；晶圓凸出可能造成	☐

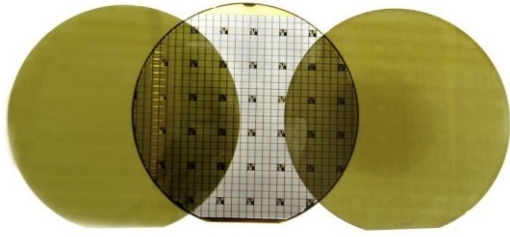
	不凸出；6 吋平邊對齊 cassette 開口前緣。 No breakage; clean backside; cassette front fully seated with no lift; wafers fully seated with no protrusion; 6-inch wafer flat aligned with cassette opening front edge.	晶圓偏移及洗邊異常。 Cassette lift may cause wafer detection-position offset and edge-rinse abnormality; wafer protrusion may cause wafer shift and edge-rinse abnormality.	
治具 / Jig	塗佈與顯影治具分開使用 / Coating and developing jigs separated	治具混用、高度錯誤 / Jig mixed or wrong height	□
配方 / Recipe	確認 Wafer Flow Recipe 與 Lot 資訊 / Recipe and lot confirmed	選錯配方 / Wrong recipe	□
PPE	依規定穿戴 / Worn as required	化學噴濺或接觸風險 / Splash or contact hazard	□



確認設備狀況牌為 RUN。 / Confirm tool status card is RUN.



若狀況牌為 DOWN，不可上機。 / Do not operate if status card is DOWN.



標準晶圓外觀確認。 / Standard wafer visual check.



標準破片 / 晶片外觀確認。 / Standard chip visual check.

4.1 上機前 60 秒檢查表 SOP | 60-Second Pre-operation Checklist SOP

#	檢查項目 Check Item	OK 標準 OK Criteria	NG 風險 / 處置 NG Risk / Action
1	設備狀況牌 Tool Status Card	RUN (正常) 。 RUN / Normal.	DOWN、維修中或狀態不明：嚴禁上機。 DOWN, under maintenance, or unknown: do not operate.
2	主畫面狀態 Main Screen	Ready，且無未處理紅色 Alarm。 Ready with no unresolved red alarm.	帶警報強行上片可能造成傳送錯誤或二次碰撞。 Forced loading may cause transfer errors or secondary collision.
3	晶圓與晶背 Wafer & Backside	無破損 / 缺角、無斜插 / 疊片、正反面正確、晶背潔淨； cassette 前端貼合定位點無翹起；晶圓完全到底；6 吋平邊對齊 cassette 開口前緣。 Intact, correctly oriented, clean backside; cassette fully seated; wafer fully seated; 6-inch flat aligned with cassette opening.	破片 / 碎片、短路、真空吸嘴污染、晶圓偏移、檢測位置錯位或洗邊異常。 Breakage/debris, short circuit, chuck contamination, wafer offset, detection-position offset, or edge-rinse abnormality.
4	治具與放置 Jig Usage	COT 與 DEV 使用各自指定專用治具；破片治具保持間隔、不可斜插。25 mm × 25 mm 破片依 6.1 規範固定。 Use designated COT/DEV jigs; keep chip jigs spaced/upright; secure 25 mm × 25 mm chips per Sec. 6.1.	治具高度 / 結構錯誤可能造成手臂、杯體或樣品碰撞。 Wrong jig height/structure may cause robot, cup, or sample collision.
5	配方與批次 Recipe & Lot	逐項確認 Wafer Flow Recipe、Lot、Port、Slot、Wafer Size。 Confirm recipe, lot, port, slot, and wafer size.	錯誤配方可能造成膜厚、烘烤溫度或藥液使用錯誤。 Wrong recipe may cause thickness, bake-temperature, or chemical errors.
6	個人防護 PPE	依無塵室規範穿戴；化學品作業依 SDS 與現場規範加戴防化學手套、護目鏡 / 面罩及必要呼吸防護。 Wear cleanroom PPE; add chemical gloves, eye/face and required respiratory protection per SDS/site rules.	化學噴濺、吸入或接觸風險。 Chemical splash, inhalation, or contact hazard.

判定原則 | Decision rule：任一項不符合即停止上機，保持設備安全狀態並通知工程師。 / **If any item is not acceptable, do not start processing; keep the tool in a safe state and notify the engineer.**

5. 標準 Run 貨流程 | Standard wafer processing workflow

Step	操作中文	English operation	畫面 / 位置 Screen / Location	注意事項 Caution
1	登入系統，確認使用者。	Log in and confirm user.	User identification	僅使用授權帳號 / Authorized account only
2	確認加熱板與模組狀態。	Check hotplate and module status.	Status / Monitor	溫度需符合製程 / Temperature must match process

3	必要時執行配方傳送。	Transfer recipe if required.	Recipe transfer	確認配方名稱 / Confirm recipe name
4	放置晶舟或破片治具。	Load cassette or chip jig.	Stage / cassette area	確認晶舟前端貼合、晶圓到底；6吋平邊方向正確。 Confirm cassette seating, wafer full-seating, and correct 6-inch flat orientation.
5	進入 Lot Start 或指定工作畫面。	Open Lot Start or Job Start screen.	Run menu	確認 port、slot 與 recipe / Confirm port, slot, and recipe
6	按 Start 後確認訊息。	Press Start and confirm messages.	Start confirmation	看清楚訊息再 Yes / Read message before Yes
7	監控 Status、Alarm 與燈號。	Monitor Status, Alarm, and LEDs.	Status screen / LEDs	RUNNING 中不可取件 / Do not unload while running
8	FINISHED 亮起後卸載並記錄。	Unload and record after FINISHED lights up.	Stage LEDs	依規定記錄 / Record as required



Lot Start 類畫面示意：確認批次與配方。 / Lot Start screen: confirm lot and recipe.



Status 畫面：監控設備配置與狀態。 / Status screen: monitor tool configuration and state.



確認視窗：按 Yes 前需看清楚訊息。 / Confirmation window: read message before pressing Yes.



完成燈號：確認 FINISHED 後再取件。 / Completion LED: unload only after FINISHED is confirmed.

6. 標準破片製程注意事項 | Standard chip process precautions

破片製程三大重點 | Three key rules for chip processing

清潔、分夾、治具不混用，是破片製程最容易被忽略但最重要的基本要求。

Cleanliness, separated tweezers, and non-mixed jigs are the most important basic rules for chip processing.

1

塗佈前請確保表面潔淨，勿使用夾過矽油的夾子來夾塗佈晶片邊緣。夾子要分類、分開使用，概念上就像生、熟食餐具不可共用。

Before coating, make sure the surface is clean. Do not use tweezers that have contacted silicone oil to hold the chip edge. Classify and separate tweezers, similar to separating utensils for raw and cooked food.

2

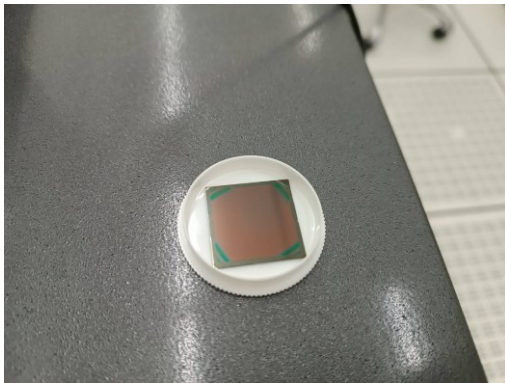
塗佈治具與顯影治具不可互用，因高度及構造不同。

Do not interchange coating and developing jigs because their height and structure are different.

3

治具需間隔放置，不可斜插。放置前須確認晶圓無破損及晶背潔淨。

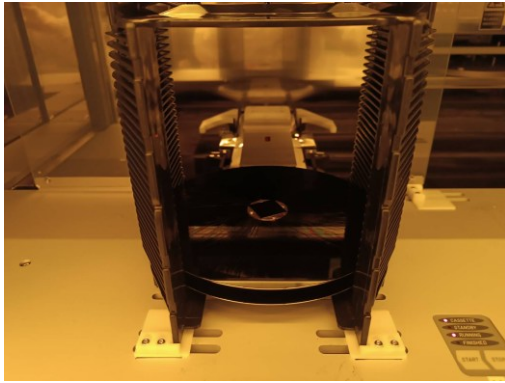
Place jigs with spacing and do not insert them at an angle. Before loading, confirm that the wafer is not broken and the backside is clean.



破片樣品：上機前確認外觀與尺寸。 / Chip sample: check appearance and dimensions before processing.



承載晶圓：確認表面與晶背潔淨。 / Carrier wafer: confirm surface and backside cleanliness.



破片治具放置示意：保持間隔。 / Chip jig placement: keep spacing.



治具區域示意：不可斜插或混放。 / Jig area: do not insert at an angle or mix jigs.

6.1 25 mm × 25 mm 破片放置要求 | 25 mm × 25 mm Chip Placement Requirements

25 mm × 25 mm 破片自動塗佈與顯影時，塗佈與顯影必須使用各自指定的專用治具，不得互換。

For automated coating and developing of 25 mm × 25 mm chips, use the designated dedicated jig for each process. Coating and developing jigs must never be interchanged.

製程 Process	正確放置 Correct Placement	確認重點 / 風險 Key Check / Risk
塗佈 COT	載片放入指定塗佈專用治具後，需逆時針旋轉至確實扣住。 Place the chip in the designated coating jig and rotate it counterclockwise until securely locked.	確認已扣住、無鬆動、無翹起。未固定可能在搬送或高速旋轉時位移 / 碰撞。 Confirm locked, stable, and flat. Poor locking may cause shift/collision during transfer or spin.
顯影 DEV	載片需平貼進入指定顯影專用治具的凹槽內。 Place the chip flat inside the recess of the designated developing jig.	確認完全進入凹槽、無卡邊、無翹起。否則可能造成搬送干涉、顯影不均或碰撞。 Confirm fully seated in the recess with no edge catching or lift; otherwise transfer interference, nonuniform development, or collision may occur.
治具指定 Dedicated Jig	塗佈與顯影均須使用指定專用治具，COT / DEV 治具不得互換。 Use the designated process-specific jig; never interchange COT and DEV jigs.	兩種治具高度與構造不同，混用可能造成手臂或杯體機構撞擊。 The jigs differ in height/structure; interchange may cause robot or cup collision.

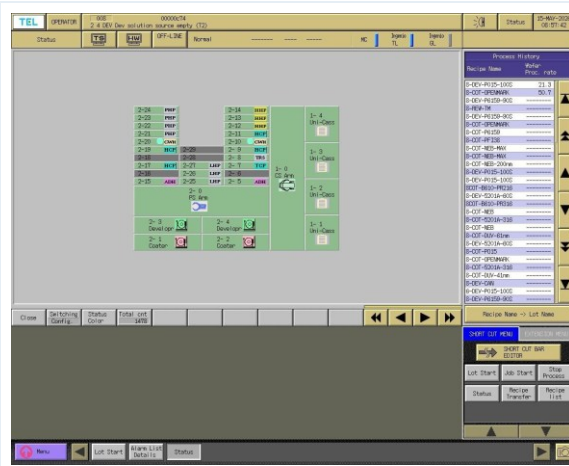
上機前再確認：破片尺寸為 25 mm × 25 mm、正反面正確、表面與背面潔淨、治具完整、固定狀態正確，且治具依既有規範保持間隔、不可斜插。

Final pre-check: confirm 25 mm × 25 mm size, correct face orientation, clean front/back surfaces, intact jig, secure seating, proper spacing, and no slanted insertion.

7. 觸控畫面與配方操作 | Touch panel and recipe operation

ACT 8Z 主要透過觸控面板操作。新手應先熟悉 Status、Alarm、Lot Start、Recipe Transfer 與確認視窗，不要只憑記憶快速點選。

ACT 8Z is mainly operated through the touch panel. Beginners should first learn the Status, Alarm, Lot Start, Recipe Transfer, and confirmation windows. Do not click quickly based only on memory.



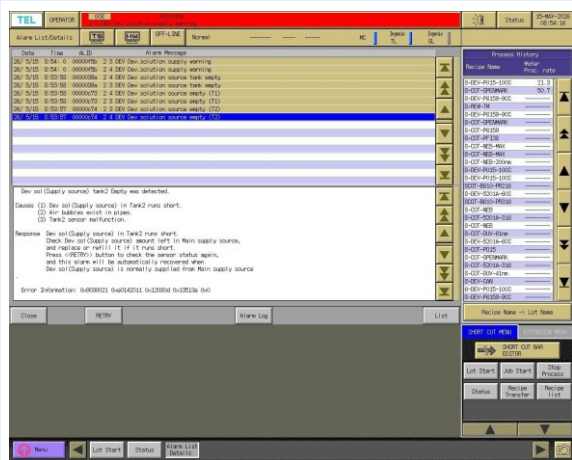
主畫面：確認設備配置與狀態。 / Main screen: verify configuration and status.



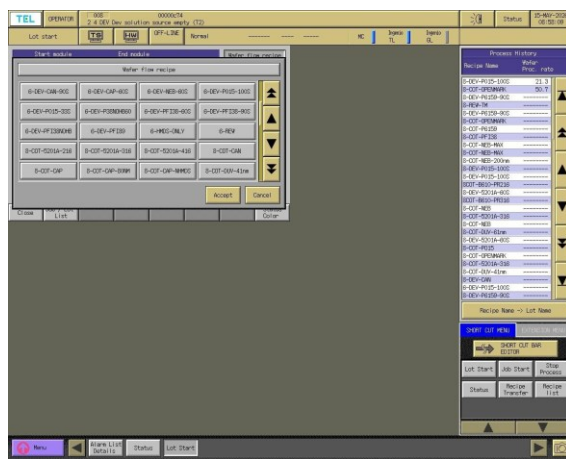
批次 Run 貨操作畫面。 / Batch processing operation screen.



指定工作或其他操作視窗。 / Job start or other operation window.



警報 / 紀錄畫面：查看 Response 與訊息。 / Alarm/log screen: review response and message.



對話框：按下前需再次核對。 / Confirmation dialog: re-check before pressing.



畫面：監控模組狀態與流程。 / Status screen: monitor module state and flow.

7.1 畫面操作原則 / Screen operation principles

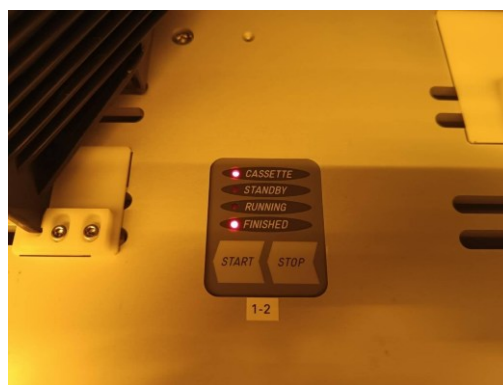
✓ 使用專用觸控筆輕觸，不以硬物敲擊。 / Use the dedicated stylus and touch lightly; do not hit the screen with hard objects.

- ✓ 任何 Yes / Start / Transfer 類按鈕，按下前先讀完訊息。 / Before pressing Yes, Start, or Transfer, read the message completely.
- ✓ Recipe 名稱、Port、Slot、Wafer Size、Lot ID 都需逐項確認。 / Confirm recipe name, port, slot, wafer size, and lot ID item by item.
- ✓ 看到紅色警報或不熟悉訊息時，不猜測、不自行復歸。 / If a red alarm or unfamiliar message appears, do not guess or recover it by yourself.

8. 燈號、狀況牌與完成判讀 | LEDs, status cards, and completion judgment



RUNNING 燈號 (閃爍)： Mapping 或處理中。 /
RUNNING LED: mapping or processing is active.



FINISHED 燈號 (恆亮)： 製程完成。 / FINISHED
LED: processing completed.



RUN 狀況牌： 設備可用。 / RUN status card: tool
available.



DOWN 狀況牌： 設備不可用，需通知工程師。 /
DOWN status card: tool unavailable; notify
engineer.

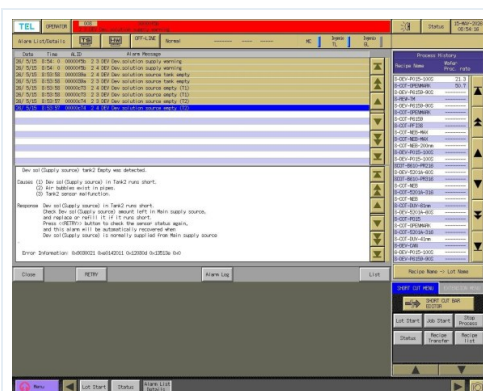
狀態 Status	中文判讀	English interpretation	新手行動 Beginner action
CASSETTE 亮 / On	晶舟已偵測。	Cassette detected.	可進行下一步檢查 / Continue pre-check.
STANDBY 閃爍 / Flashing	等待開始或待命。	Waiting or standby.	依 SOP 確認是否按 START / Confirm whether START is needed.

RUNNING 亮 / On	製程進行中。	Processing in progress.	不可取件 / Do not unload.
FINISHED 亮 / On	製程完成。	Processing completed.	確認畫面與 SOP 後取件 / Unload after screen and SOP confirmation.

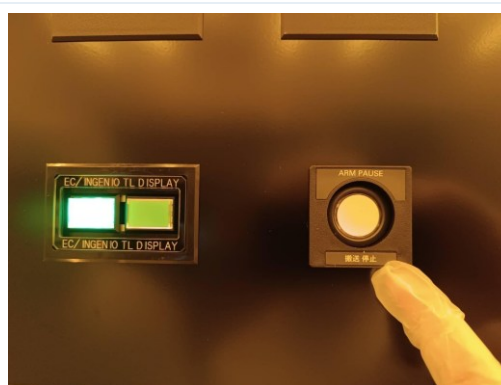
9. 警報與異常處置 | Alarm and abnormal handling

五字處置口訣：停蜂鳴、停搬送、看警報、通知工程師、掛維修牌。

Alarm handling cue: silence buzzer, pause robotics, check alarm details, notify the engineer, and set DOWN status.



Alarm List / Details : 查看警報內容與 Response。 /
Alarm List / Details: check alarm content and
response.



必要時按 ARM PAUSE 暫停搬送。 / Press ARM PAUSE if transfer needs to be paused.



維修中狀況牌：異常需停用時使用。 / DOWN card:
use when the tool must be taken out of service.



EMO：火災、嚴重洩漏、人員安全風險才使用。 /
EMO: use only for fire, major leak, or personnel
safety risk.

Step	中文	English
1	停蜂鳴：按 Buzzer Stop 或 BZ OFF 停止蜂鳴。	Silence buzzer: press Buzzer Stop or BZ OFF.
2	停搬送：發現手臂搬送異常、碰撞疑慮或晶圓偏斜時，立即按 ARM PAUSE。	Pause robotics: press ARM PAUSE immediately if transfer abnormality, collision risk, or wafer misalignment is observed.
3	看警報：進入 Alarm List / Details，查看警報代碼、異常內容與 Response。	Check alarm details: open Alarm List / Details and review the alarm code, message, and Response.
4	通知工程師：一般操作員 / 新手不可自行猜測、嘗試復歸或按 Clear Alarm。	Notify engineer: operators/beginners must not guess, attempt recovery, or press Clear Alarm on their own.
5	掛維修牌：若無法即時排除或需檢修，將設備狀況牌更換為 DOWN。	Set DOWN status if the alarm cannot be promptly cleared or maintenance is required.

9.1 EMO 使用時機 / When to use EMO

可以按 EMO / EMO is allowed	不可按 EMO / EMO is NOT for
• 火災 / Fire • 人員夾傷或碰撞 / Personnel injury or collision • 嚴重化學品洩漏 / Major chemical leak • 觸電風險 / Electric shock risk	• 一般警報 / General alarm • 操作不確定 / Operator uncertainty • 正常關機 / Normal shutdown • 單純想終止製程 / Routine process stop → 使用 Stop processing / Cancel (recovery)

9.2 製程中止 | Aborting Wafer Processing

製程中止應依目的選擇軟體 Stop processing 模式，或在搬送異常時使用硬體暫停。一般操作員不應以 EMO 取代正常的製程中止。

Choose the appropriate software Stop processing mode for process interruption, or use hardware pause controls for transfer abnormalities. EMO must not be used as a substitute for routine process stopping.

模式 Mode	適用時機 When to Use	操作步驟 Procedure	系統動作 System Behavior
Stop Sending 僅停止投片	不再從 Cassette 送出新晶圓，但已進入機台內的晶圓繼續完成既有製程。 Stop new wafer dispatch while in-tool wafers continue processing.	1. Run → Stop processing 2. 以滾動按鈕選取目標 Lot 3. Stop Sending 4. 確認「Stop wafer send at lot "XXXXXX"?」→ Yes	立即停止送出新晶圓；機內晶圓依 Wafer Transfer Recipe 完成處理並安全回收至 Cassette。 No new wafers are sent; in-tool wafers finish and return to the cassette.
Cancel (recovery) 立即中斷並回收	發生異常或需立即中止機內正在執行的製程，並回收晶圓。 Use when in-tool processing must be interrupted and wafers recovered.	1. Run → Stop processing 2. 以滾動按鈕選取目標 Lot 3. Cancel (recovery) 4. 確認「Cancel processing of lot "XXXXXX" and recover wafers?」→ Yes	停止出片並立即中斷機內晶圓製程，執行晶圓回收至 Cassette。 Stops dispatch, interrupts in-tool processing, and recovers wafers to the cassette.

硬體中止 / 暫停 | Hardware Stop / Pause

控制 Control	用途 Function	操作邊界 Boundary
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Cassette Stage STOP	晶舟載台 1-1 ~ 1-4 的 STOP 可暫停該 Cassette 區域運作與出片。 STOP at stages 1-1 to 1-4 pauses operation/wafer dispatch for that cassette area.	依 SOP 使用；用於區域暫停，不取代 EMO。 Use per SOP for local pause; it does not replace EMO.
ARM PAUSE	手臂搬送異常、有碰撞疑慮或晶圓偏斜時，立即暫停 CRA/PRA 搬送。 Immediately pauses CRA/PRA transfer for abnormal transfer, collision risk, or wafer misalignment.	暫停後查看 Alarm / Response 並通知工程師；不可自行盲目復歸。 After pausing, review Alarm/Response and notify the engineer; do not blindly recover.
EMO	僅限火災、人員夾傷 / 碰撞、嚴重化學品洩漏或觸電風險等重大安全緊急狀況。 Reserved for serious safety emergencies: fire, injury/collision, major chemical leak, or electric shock risk.	會啟動設備緊急停止；後續復歸與晶圓回收須由授權人員依 SOP 處理。非一般警報或單純製程中止用途。 Initiates emergency stop. Recovery and wafer handling must follow SOP by authorized personnel; not for general alarms or routine process stopping.

△ **Cancel (recovery)** 會中斷機內正在執行的處理。執行前必須再次確認 Lot；若異常位置、晶圓狀態或搬送狀況不明，先 **ARM PAUSE** 並通知工程師。

Cancel (recovery) interrupts in-tool processing. Reconfirm the lot before execution. If wafer position/status or transfer condition is uncertain, use ARM PAUSE and notify the engineer first.

10. 附錄：術語 | Appendix: glossary

10.1 術語表 / Glossary

術語 Term	中文說明	English
EC	設備控制畫面。	Equipment control screen.
Ingenio TL	資料管理 / 紀錄相關系統畫面。	Tool-level data management / log screen.
Lot Start	批次 Run 貨啟動功能。	Function for starting batch processing.
Wafer Flow Recipe	晶圓流程配方。	Wafer process flow recipe.
Mapping	機械手臂確認晶圓槽位的動作。	Robot arm slot mapping / wafer position check.
EMO	緊急停止。	Emergency Off.
ARM PAUSE	搬送停止。	Robot arm transfer pause.
FINISHED	製程完成燈號。	Processing completion LED.

結語 | Closing note

本手冊目標是讓新手一眼看懂流程與風險；實際操作時仍需以現場 SOP、工程師指示與原廠文件為準。
This guide is designed for quick understanding of workflow and risks. Actual operations must follow site SOPs, engineer instructions, and official vendor documentation.