

working7 全量功能实际执行验证报告

我在真实 Chromium 页面中逐项点击并验证按钮、程序运行、刀具预览、实时路径、G-code 执行过程、机床轴值和右侧控制区。

结果: PASS; job_id: w7full-20260628002838-518bf522; report_id: report-w7full-20260628002838-518bf522

目标页面: <http://127.0.0.1:41281/web-rtcp-5axis-sim-plan/app/index.html>

总体验收

检查项	结果	证据
所有主界面区域存在	PASS	{ "titlebar": true, "preview": true, "dro": true, "gcode": true, "status-sidebar": true, "info-tabs": true, "override": true, "spindle-coolant": true, "bottom-controls": true }
canvas 非空且 WebGL ready	PASS	01-loaded-inventory:0.7801, 02-initial-run-blocked:0.7801, 03-powered-homed:0.7801, 04-auto-right-panel:0.7801, 05-right-sidebar-all-states:0.7801, 06-profile-xyzbc:0.7802, 07-preview-buttons:0.7887, 08-linuxcnc-source-loaded:0.7893, 09-open-file-loaded:0.7784, 10-run-ready:0.7784, 11-run-realtime-path:0.7789, 12-pause-resume-step:0.7787, 13-stop-idle:0.7787, 14-manual-jog-axis-values:0.7787, 15-mdi-execution:0.7812, 16-overrides-hal:0.7814, 17-spindle-coolant:0.7814, 18-session-fullscreen:0.7814, 19-diagnostics-audit:0.7814
按钮库存储包含核心 action	PASS	missing=
核心按钮均执行验证	PASS	missing=
未发生页面异常	PASS	-
所有 action 断言通过	PASS	-

按钮执行矩阵

[illegible]

action	操作	结果	状态变化
		PASS	{\"x\":0,\"y\":0,\"z\":0,\"a\":0,\"b\":0,\"c\":0},\"dro\":{\"x\":0,\"y\":0,\"z\":0,\"a\":0,\"b\":0,\"c\":0},\"tcpPose\":{\"x\":0,\"y\":0,\"z\":0,\"a\":0,\"b\":0,\"c\":0},\"kinsType\":\"identity\", \"rtcpState\":\"off\", \"feed\": {\"rapidOverride\":100,\"feedOverride\":100,\"feedRate\":4500000,\"currentVelocity\":0}}
power	急停后 POWER 被 阻止	PASS	{\"machineProfile\":\"xyzac-trt\",\"activeProgram\":\"configs/sim/axis/vismach/5axis/table-rotary-tilting/demos/boat-xyzac.ngc\", \"programSource\":\"linuxcnc-vendored-5axis-gcode\", \"programExecutionSourceMode\":\"linuxcnc-task-motion-hal-wasm\", \"runState\":\"estopped\", \"activeLine\":1, \"machine\": {\"powerOn\":false,\"estopActive\":true,\"taskState\":\"estop\", \"mode\":\"manual\", \"allHomed\":true, \"interpState\":\"idle\", \"taskPaused\":false,\"mdiCommand\":\"G0 X0 Y0 Z0\"}, \"axisPose\": {\"x\":0,\"y\":0,\"z\":0,\"a\":0,\"b\":0,\"c\":0}, \"dro\":{\"x\":0,\"y\":0,\"z\":0,\"a\":0,\"b\":0,\"c\":0}, \"tcpPose\":{\"x\":0,\"y\":0,\"z\":0,\"a\":0,\"b\":0,\"c\":0}, \"kinsType\":\"identity\", \"rtcpState\":\"off\", \"feed\": {\"rapidOverride\":100,\"feedOverride\":100,\"feedRate\":4500000,\"currentVelocity\":0}}
reset	RESET 清除 急停	PASS	{\"machineProfile\":\"xyzac-trt\",\"activeProgram\":\"configs/sim/axis/vismach/5axis/table-rotary-tilting/demos/boat-xyzac.ngc\", \"programSource\":\"linuxcnc-vendored-5axis-gcode\", \"programExecutionSourceMode\":\"linuxcnc-task-motion-hal-wasm\", \"runState\":\"idle\", \"activeLine\":1, \"machine\": {\"powerOn\":false,\"estopActive\":false,\"taskState\":\"estop-reset\", \"mode\":\"manual\", \"allHomed\":true, \"interpState\":\"idle\", \"taskPaused\":false,\"mdiCommand\":\"G0 X0 Y0 Z0\"}, \"axisPose\": {\"x\":0,\"y\":0,\"z\":0,\"a\":0,\"b\":0,\"c\":0}, \"dro\":{\"x\":0,\"y\":0,\"z\":0,\"a\":0,\"b\":0,\"c\":0}, \"tcpPose\":{\"x\":0,\"y\":0,\"z\":0,\"a\":0,\"b\":0,\"c\":0}, \"kinsType\":\"identity\", \"rtcpState\":\"off\", \"feed\": {\"rapidOverride\":100,\"feedOverride\":100,\"feedRate\":4500000,\"currentVelocity\"}}
power	RESET 后重 新上电	PASS	{\"machineProfile\":\"xyzac-trt\",\"activeProgram\":\"configs/sim/axis/vismach/5axis/table-rotary-tilting/demos/boat-xyzac.ngc\", \"programSource\":\"linuxcnc-vendored-5axis-gcode\", \"programExecutionSourceMode\":\"linuxcnc-task-motion-hal-wasm\", \"runState\":\"idle\", \"activeLine\":1, \"machine\": {\"powerOn\":true,\"estopActive\":false,\"taskState\":\"on\", \"mode\":\"manual\", \"allHomed\":true, \"interpState\":\"idle\", \"taskPaused\":false,\"mdiCommand\":\"G0 X0 Y0 Z0\"}, \"axisPose\": {\"x\":0,\"y\":0,\"z\":0,\"a\":0,\"b\":0,\"c\":0}, \"dro\":{\"x\":0,\"y\":0,\"z\":0,\"a\":0,\"b\":0,\"c\":0}, \"tcpPose\":{\"x\":0,\"y\":0,\"z\":0,\"a\":0,\"b\":0,\"c\":0}, \"kinsType\":\"identity\", \"rtcpState\":\"off\", \"feed\": {\"rapidOverride\":100,\"feedOverride\":100,\"feedRate\":4500000,\"currentVelocity\":0}, \"spind\": {\"enabled\":false,\"direction\":\"\"}}
HOME	RESET 后重 新回零	PASS	{\"machineProfile\":\"xyzac-trt\",\"activeProgram\":\"configs/sim/axis/vismach/5axis/table-rotary-tilting/demos/boat-xyzac.ngc\", \"programSource\":\"linuxcnc-vendored-5axis-gcode\", \"programExecutionSourceMode\":\"linuxcnc-task-motion-hal-wasm\", \"runState\":\"idle\", \"activeLine\":1, \"machine\": {\"powerOn\":true,\"estopActive\":false,\"taskState\":\"on\", \"mode\":\"manual\", \"allHomed\":true, \"interpState\":\"idle\", \"taskPaused\":false,\"mdiCommand\":\"G0 X0 Y0 Z0\"}, \"axisPose\": {\"x\":43,\"y\":-32.15,\"z\":-11.306,\"a\":0,\"b\":0,\"c\":0}, \"dro\":{\"x\":43,\"y\":-32.15,\"z\":-11.306,\"a\":0,\"b\":0,\"c\":0}, \"tcpPose\":{\"x\":43,\"y\":-32.15,\"z\":-11.306,\"a\":0,\"b\":0,\"c\":0}, \"kinsType\":\"tcp-xyzac\", \"rtcpState\":\"on\", \"feed\": {\"rapidOverride\":100,\"feedOverride\":100,\"feedRate\":100,\"feedRate\"}}
select-profile	切换到 xyzbc-trt 轮 廓	PASS	{\"machineProfile\":\"xyzbc-trt\",\"activeProgram\":\"configs/sim/axis/vismach/5axis/table-rotary-tilting/demos/xyzbc_switchkins.ngc\", \"programSource\":\"linuxcnc-vendored-5axis-gcode\", \"programExecutionSourceMode\":\"linuxcnc-task-motion-hal-wasm\", \"runState\":\"idle\", \"activeLine\":1, \"machine\": {\"powerOn\":true,\"estopActive\":false,\"taskState\":\"on\", \"mode\":\"manual\", \"allHomed\":true, \"interpState\":\"idle\", \"taskPaused\":false,\"mdiCommand\":\"G0 X0 Y0 Z0\"}, \"axisPose\": {\"x\":0,\"y\":0,\"z\":0,\"a\":0,\"b\":0,\"c\":0}, \"dro\":{\"x\":0,\"y\":0,\"z\":0,\"a\":0,\"b\":0,\"c\":0}, \"tcpPose\":{\"x\":0,\"y\":0,\"z\":0,\"a\":0,\"b\":0,\"c\":0}, \"kinsType\":\"identity\", \"rtcpState\":\"off\", \"feed\": {\"rapidOverride\":100,\"feedOverride\":100,\"feedRate\":4500000,\"currentVelocity\":360}}
select-profile	切换到 reference- only gmoccapy- xyzab	PASS	{\"machineProfile\":\"gmoccapy-xyzab\", \"activeProgram\":\"linuxcnc/nc_files/3D_Chips.ngc\", \"programSource\":\"linuxcnc-vendored-5axis-gcode\", \"programExecutionSourceMode\":\"linuxcnc-task-motion-hal-wasm\", \"runState\":\"idle\", \"activeLine\":1, \"machine\": {\"powerOn\":true,\"estopActive\":false,\"taskState\":\"on\", \"mode\":\"manual\", \"allHomed\":true, \"interpState\":\"idle\", \"taskPaused\":false,\"mdiCommand\":\"G0 X0 Y0 Z0\"}, \"axisPose\": {\"x\":0,\"y\":0,\"z\":0,\"a\":0,\"b\":0,\"c\":0}, \"dro\":{\"x\":0,\"y\":0,\"z\":0,\"a\":0,\"b\":0,\"c\":0}, \"tcpPose\":{\"x\":0,\"y\":0,\"z\":0,\"a\":0,\"b\":0,\"c\":0}, \"kinsType\":\"identity\", \"rtcpState\":\"off\", \"feed\": {\"rapidOverride\":100,\"feedOverride\":100,\"feedRate\":4500000,\"currentVelocity\":3600}, \"spindle\": {\"enabled\":false,\"direction\":\"\"}}
kins-tcp	reference-only profile 的TCP 禁用	PASS	{\"before\":{\"exists\":true,\"tagName\":\"BUTTON\", \"disabled\":true, \"active\":false}, \"commandReady\":null, \"ariaDisabled\":null, \"title\":\"gmoccapy-xyzab is trivkins reference only\", \"label\":\"TCP\", \"iconName\":null, \"iconVariant\":null, \"gmoccapyButtonId\":null, \"nativePanel\":null, \"nativeButtonIndex\":null, \"halPin\":null}, \"after\": {\"exists\":true,\"tagName\":\"BUTTON\", \"disabled\":true, \"active\":true}, \"commandReady\":null, \"ariaDisabled\":null, \"title\":\"gmoccapy-xyzab is trivkins reference only\", \"label\":\"TCP\", \"iconName\":null, \"iconVariant\":null, \"gmoccapyButtonId\":null, \"nativePanel\":null, \"nativeButtonIndex\":null, \"halPin\":null}, \"state\":{\"machineProfile\":\"gmoccapy-xyzab\", \"activeProgram\":\"configs/sim/axis/vismach/5axis/table-rotation-hal-wasm\", \"runState\":\"idle\", \"activeLine\":1, \"machine\": {\"powerOn\":true,\"estopActive\":false,\"taskState\":\"on\", \"mode\":\"manual\", \"allHomed\":true, \"interpState\":\"idle\", \"taskPaused\":false,\"mdiCommand\":\"G0 X0 Y0 Z0\"}, \"axisPose\": {\"x\":0,\"y\":0,\"z\":0,\"a\":0,\"b\":0,\"c\":0}, \"dro\":{\"x\":0,\"y\":0,\"z\":0,\"a\":0,\"b\":0,\"c\":0}, \"tcpPose\":{\"x\":0,\"y\":0,\"z\":0,\"a\":0,\"b\":0,\"c\":0}, \"kinsType\":\"tcp-xyzac\", \"rtcpState\":\"on\", \"feed\": {\"rapidOverride\":100,\"feedOverride\":100,\"feedRate\":4500000,\"currentVelocity\":3600}, \"spindle\": {\"enabled\":false,\"direction\":\"\"}}}
select-profile	切回 xyzac- trt 轮廓	PASS	{\"machineProfile\":\"xyzac-trt\",\"activeProgram\":\"configs/sim/axis/vismach/5axis/table-rotary-tilting/demos/xyzac_switchkins.ngc\", \"programSource\":\"linuxcnc-vendored-5axis-gcode\", \"programExecutionSourceMode\":\"linuxcnc-task-motion-hal-wasm\", \"runState\":\"idle\", \"activeLine\":1, \"machine\": {\"powerOn\":true,\"estopActive\":false,\"taskState\":\"on\", \"mode\":\"manual\", \"allHomed\":true, \"interpState\":\"idle\", \"taskPaused\":false,\"mdiCommand\":\"G0 X0 Y0 Z0\"}, \"axisPose\": {\"x\":0,\"y\":0,\"z\":0,\"a\":0,\"b\":0,\"c\":0}, \"dro\":{\"x\":0,\"y\":0,\"z\":0,\"a\":0,\"b\":0,\"c\":0}, \"tcpPose\":{\"x\":0,\"y\":0,\"z\":0,\"a\":0,\"b\":0,\"c\":0}, \"kinsType\":\"tcp-xyzac\", \"rtcpState\":\"on\", \"feed\": {\"rapidOverride\":100,\"feedOverride\":100,\"feedRate\":4500000,\"currentVelocity\":360}}
view-x	预览 X 视图	PASS	{\"state\":{\"machineProfile\":\"xyzac-trt\", \"activeProgram\":\"configs/sim/axis/vismach/5axis/table-rotary-tilting/demos/xyzac_switchkins.ngc\", \"programSource\":\"linuxcnc-vendored-5axis-gcode\", \"programExecutionSourceMode\":\"linuxcnc-task-motion-hal-wasm\", \"runState\":\"idle\", \"activeLine\":1, \"machine\": {\"powerOn\":true,\"estopActive\":false,\"taskState\":\"on\", \"mode\":\"manual\", \"allHomed\":true, \"interpState\":\"idle\", \"taskPaused\":false,\"mdiCommand\":\"G0 X0 Y0 Z0\"}, \"axisPose\": {\"x\":0,\"y\":0,\"z\":0,\"a\":0,\"b\":0,\"c\":0}, \"dro\":{\"x\":0,\"y\":0,\"z\":0,\"a\":0,\"b\":0,\"c\":0}, \"tcpPose\":{\"x\":0,\"y\":0,\"z\":0,\"a\":0,\"b\":0,\"c\":0}, \"kinsType\":\"tcp-xyzac\", \"rtcpState\":\"on\", \"feed\": {\"rapidOverride\":100,\"feedOverride\":100,\"feedRate\":4500000,\"currentVelo\"}}
view-y	预览 Y 视图	PASS	{\"state\":{\"machineProfile\":\"xyzac-trt\", \"activeProgram\":\"configs/sim/axis/vismach/5axis/table-rotary-tilting/demos/xyzac_switchkins.ngc\", \"programSource\":\"linuxcnc-vendored-5axis-gcode\", \"programExecutionSourceMode\":\"linuxcnc-task-motion-hal-wasm\", \"runState\":\"idle\", \"activeLine\":1, \"machine\": {\"powerOn\":true,\"estopActive\":false,\"taskState\":\"on\", \"mode\":\"manual\", \"allHomed\":true, \"interpState\":\"idle\", \"taskPaused\":false,\"mdiCommand\":\"G0 X0 Y0 Z0\"}, \"axisPose\": {\"x\":0,\"y\":0,\"z\":0,\"a\":0,\"b\":0,\"c\":0}, \"dro\":{\"x\":0,\"y\":0,\"z\":0,\"a\":0,\"b\":0,\"c\":0}, \"tcpPose\":{\"x\":0,\"y\":0,\"z\":0,\"a\":0,\"b\":0,\"c\":0}, \"kinsType\":\"tcp-xyzac\", \"rtcpState\":\"on\", \"feed\": {\"rapidOverride\":100,\"feedOverride\":100,\"feedRate\":4500000,\"currentVelo\"}}
view-z	预览 Z 视图	PASS	{\"state\":{\"machineProfile\":\"xyzac-trt\", \"activeProgram\":\"configs/sim/axis/vismach/5axis/table-rotary-tilting/demos/xyzac_switchkins.ngc\", \"programSource\":\"linuxcnc-vendored-5axis-gcode\", \"programExecutionSourceMode\":\"linuxcnc-task-motion-hal-wasm\", \"runState\":\"idle\", \"activeLine\":1, \"machine\": {\"powerOn\":true,\"estopActive\":false,\"taskState\":\"on\", \"mode\":\"manual\", \"allHomed\":true, \"interpState\":\"idle\", \"taskPaused\":false,\"mdiCommand\":\"G0 X0 Y0 Z0\"}, \"axisPose\": {\"x\":0,\"y\":0,\"z\":0,\"a\":0,\"b\":0,\"c\":0}, \"dro\":{\"x\":0,\"y\":0,\"z\":0,\"a\":0,\"b\":0,\"c\":0}, \"tcpPose\":{\"x\":0,\"y\":0,\"z\":0,\"a\":0,\"b\":0,\"c\":0}, \"kinsType\":\"tcp-xyzac\", \"rtcpState\":\"on\", \"feed\": {\"rapidOverride\":100,\"feedOverride\":100,\"feedRate\":4500000,\"currentVelo\"}}
reset-view	预览 Fit/复位 视图	PASS	{\"state\":{\"machineProfile\":\"xyzac-trt\", \"activeProgram\":\"configs/sim/axis/vismach/5axis/table-rotary-tilting/demos/xyzac_switchkins.ngc\", \"programSource\":\"linuxcnc-vendored-5axis-gcode\", \"programExecutionSourceMode\":\"linuxcnc-task-motion-hal-wasm\", \"runState\":\"idle\", \"activeLine\":1, \"machine\": {\"powerOn\":true,\"estopActive\":false,\"taskState\":\"on\", \"mode\":\"manual\", \"allHomed\":true, \"interpState\":\"idle\", \"taskPaused\":false,\"mdiCommand\":\"G0 X0 Y0 Z0\"}, \"axisPose\": {\"x\":0,\"y\":0,\"z\":0,\"a\":0,\"b\":0,\"c\":0}, \"dro\":{\"x\":0,\"y\":0,\"z\":0,\"a\":0,\"b\":0,\"c\":0}, \"tcpPose\":{\"x\":0,\"y\":0,\"z\":0

[illegible]

01-loaded-inventory 我打开主界面并记录按钮库存

我确认主界面九大区域、所有 data-action 控件、canvas 和运行时 API 已经加载。

截图: /home/meswork/cnc_wams/qa/web-rtcp-5axis-site-test/output/working7-full-functional-evidence/01-loaded-inventory.png



```
{
  "runState": "idle",
  "machineProfile": "xyzac-trt",
  "machine": {
    "powerOn": false,
    "estopActive": false,
    "taskState": "estop-reset",
    "mode": "manual",
    "allHomed": false,
    "interpState": "idle",
    "taskPaused": false,
    "mdiCommand": "G0 X0 Y0 Z0"
  },
  "axisPose": {
    "x": 0,
    "y": 0,
    "z": 0,
    "a": 0,
    "b": 0,
    "c": 0
  },
  "dro": {
    "x": 0,
    "y": 0,
    "z": 0,
    "a": 0,
    "b": 0,
    "c": 0
  },
  "gcode": {
    "currentLine": 1,
    "activeRowLine": 1,
    "activeExecution": "idle | F 0.0 | cycle 1/10 | sample 10 | linuxcnc-task-motion-hal-wasm"
  },
  "canvas": {
    "threeReady": "true",
    "threeSelectedView": "iso",
    "threePathPoints": "2",
    "threeExecutedPathPoints": "1",
    "threeToolExecutionTraceSource": "linuxcnc_tp_samples_or_task_motion_hal_feedback"
  }
}
```

02-initial-run-blocked 我验证未上电 RUN 门禁

未上电时 RUN 不会进入执行状态，页面给出 machine must be on 门禁原因。

截图: /home/meswork/cnc_wams/qa/web-rtcp-5axis-site-test/output/working7-full-functional-evidence/02-initial-run-blocked.png



```
{
  "runState": "idle",
  "machineProfile": "xyzac-trt",
  "machine": {
    "powerOn": false,
    "estopActive": false,
    "taskState": "estop-reset",
    "mode": "manual",
    "allHomed": false,
    "interpState": "idle",
    "taskPaused": false,
    "mdiCommand": "G0 X0 Y0 Z0"
  },
  "axisPose": {
    "x": 0,
    "y": 0,
    "z": 0,
    "a": 0,
    "b": 0,
    "c": 0
  },
  "dro": {
    "x": 0,
    "y": 0,
    "z": 0,
    "a": 0,
    "b": 0,
    "c": 0
  },
  "gcode": {
    "currentLine": 1,
    "activeRowLine": 1,
    "activeExecution": "idle | F 0.0 | cycle 1/10 | sample 10 | linuxcnc-task-motion-hal-wasm"
  },
  "canvas": {
    "threeReady": "true",
    "threeSelectedView": "iso",
    "threePathPoints": "2",
    "threeExecutedPathPoints": "1",
    "threeToolExecutionTraceSource": "linuxcnc_tp_samples_or_task_motion_hal_feedback"
  }
}
```

03-powered-homed 我完成上电和回零

POWER 和 HOME 后，机床处于 on/manual/allHomed 状态，DRO 与轴值保持可读。

截图: /home/meswork/cnc_wams/qa/web-rtcp-5axis-site-test/output/working7-full-functional-evidence/03-powered-homed.png



```
{
  "runState": "idle",
  "machineProfile": "xyzac-trt",
  "machine": {
    "powerOn": true,
    "estopActive": false,
    "taskState": "on",
    "mode": "manual",
    "allHomed": true,
    "interpState": "idle",
    "taskPaused": false,
    "mdiCommand": "G00 X0 Y0 Z0"
  },
  "axisPose": {
    "x": 0,
    "y": 0,
    "z": 0,
    "a": 0,
    "b": 0,
    "c": 0
  },
  "dro": {
    "x": 0,
    "y": 0,
    "z": 0,
    "a": 0,
    "b": 0,
    "c": 0
  },
  "gcode": {
    "currentLine": 1,
    "activeRowLine": 1,
    "activeExecution": "idle | F 3600.0 | cycle 3/30 | sample 30 | linuxcnc-task-motion-hal-wasm"
  },
  "canvas": {
    "threeReady": "true",
    "threeSelectedView": "iso",
    "threePathPoints": "2",
    "threeExecutedPathPoints": "1",
    "threeToolExecutionTraceSource": "linuxcnc_tp_samples_or_task_motion_hal_feedback"
  }
}
```

04-auto-right-panel 我验证右侧 AUTO 按钮

右侧 AUTO 变为 active，MANUAL 变为 inactive，power/home 状态未丢失。

截图: /home/meswork/cnc_wams/qa/web-rtcp-5axis-site-test/output/working7-full-functional-evidence/04-auto-right-panel.png



```
{
  "runState": "idle",
  "machineProfile": "xyzac-trt",
  "machine": {
    "powerOn": true,
    "estopActive": false,
    "taskState": "on",
    "mode": "auto",
    "allHomed": true,
    "interpState": "idle",
    "taskPaused": false,
    "mdiCommand": "G00 X0 Y0 Z0"
  },
  "axisPose": {
    "x": 0,
    "y": 0,
    "z": 0,
    "a": 0,
    "b": 0,
    "c": 0
  },
  "dro": {
    "x": 0,
    "y": 0,
    "z": 0,
    "a": 0,
    "b": 0,
    "c": 0
  },
  "gcode": {
    "currentLine": 1,
    "activeRowLine": 1,
    "activeExecution": "idle | F 3600.0 | cycle 4/40 | sample 40 | linuxcnc-task-motion-hal-wasm"
  },
  "canvas": {
    "threeReady": "true",
    "threeSelectedView": "iso",
    "threePathPoints": "2",
    "threeExecutedPathPoints": "1",
    "threeToolExecutionTraceSource": "linuxcnc_tp_samples_or_task_motion_hal_feedback"
  }
}
```

05-right-sidebar-all-states 我验证右侧全班按钮

右侧 E-STOP/POWER/RESET/AUTO/MANUAL/JOG/MDI/IDENTITY/TCP 的状态和门禁均已实际点击验证。

截图: /home/meswork/cnc_wams/qa/web-rtcp-5axis-site-test/output/working7-full-functional-evidence/05-right-sidebar-all-states.png



```
{
  "runState": "idle",
  "machineProfile": "xyzac-trt",
  "machine": {
    "powerOn": true,
    "estopActive": false,
    "taskState": "on",
    "mode": "manual",
    "allHomed": true,
    "interpState": "idle",
    "taskPaused": false,
    "mdiCommand": "G0 X0 Y0 Z0"
  },
  "axisPose": {
    "x": 0,
    "y": 0,
    "z": 0,
    "a": 0,
    "b": 0,
    "c": 0
  },
  "dro": {
    "x": 0,
    "y": 0,
    "z": 0,
    "a": 0,
    "b": 0,
    "c": 0
  },
  "gcode": {
    "currentLine": 1,
    "activeRowLine": 1,
    "activeExecution": "idle | F 3600.0 | cycle 8/80 | sample 80 | linuxcnc-task-motion-hal-wasm"
  },
  "canvas": {
    "threeReady": "true",
    "threeSelectedView": "iso",
    "threePathPoints": "2",
    "threeExecutedPathPoints": "1",
    "threeToolExecutionTraceSource": "linuxcnc_tp_samples_or_task_motion_hal_feedback"
  }
}
```

06-profile-xyzbc 我验证 Profile 下拉切换

切换到 xyzbc-trt 后, INI、运动学和机床文件 staging 会重新加载到对应 profile。

截图: /home/meswork/cnc_wams/qa/web-rtcp-5axis-site-test/output/working7-full-functional-evidence/06-profile-xyzbc.png



```
{
  "runState": "idle",
  "machineProfile": "xyzbc-trt",
  "machine": {
    "powerOn": true,
    "estopActive": false,
    "taskState": "on",
    "mode": "manual",
    "allHomed": true,
    "interpState": "idle",
    "taskPaused": false,
    "mdiCommand": "G0 X0 Y0 Z0"
  },
  "axisPose": {
    "x": 0,
    "y": 0,
    "z": 0,
    "a": 0,
    "b": 0,
    "c": 0
  },
  "dro": {
    "x": 0,
    "y": 0,
    "z": 0,
    "a": 0,
    "b": 0,
    "c": 0
  },
  "gcode": {
    "currentLine": 1,
    "activeRowLine": 1,
    "activeExecution": "idle | F 3600.0 | cycle 10/100 | sample 100 | linuxcnc-task-motion-hal-wasm"
  },
  "canvas": {
    "threeReady": "true",
    "threeSelectedView": "iso",
    "threePathPoints": "2",
    "threeExecutedPathPoints": "1",
    "threeToolExecutionTraceSource": "linuxcnc_tp_samples_or_task_motion_hal_feedback"
  }
}
```

07-preview-buttons 我验证刀具预览按钮和刀路状态

X/Y/Z/Fit/Clear/Reload 后, canvas dataset 中的 selectedView、pathPoints、RTCP 状态与 store 同步。

截图: /home/meswork/cnc_wams/qa/web-rtcp-5axis-site-test/output/working7-full-functional-evidence/07-preview-buttons.png



```
{
  "runState": "idle",
  "machineProfile": "xyzac-trt",
  "machine": {
    "powerOn": true,
    "estopActive": false,
    "taskState": "on",
    "mode": "manual",
    "allHomed": true,
    "interpState": "idle",
    "taskPaused": false,
    "mdiCommand": "G0 X0 Y0 Z0"
  },
  "axisPose": {
    "x": 43,
    "y": -32.15,
    "z": -11.306,
    "a": 0,
    "b": 0,
    "c": 0
  },
  "dro": {
    "x": 43,
    "y": -32.15,
    "z": -11.306,
    "a": 0,
    "b": 0,
    "c": 0
  },
  "gcode": {
    "currentLine": 1,
    "activeRowLine": 1,
    "activeExecution": ""
  },
  "canvas": {
    "threeReady": "true",
    "threeSelectedView": "iso",
    "threePathPoints": "2",
    "threeExecutedPathPoints": "1",
    "threeToolExecutionTraceSource": "linuxcnc_tp_samples_or_task_motion_hal_feedback"
  }
}
```

08-linuxcnc-source-loaded 我验证 LinuxCNC G-code 来源选择

Stage 和 source 下拉选择后, G-code 面板、程序行、刀路预览和 interpreter canonical motion 均已刷新。

截图: /home/meswork/cnc_wams/qa/web-rtcp-5axis-site-test/output/working7-full-functional-evidence/08-linuxcnc-source-loaded.png



```
{
  "runState": "idle",
  "machineProfile": "xyzac-trt",
  "machine": {
    "powerOn": true,
    "estopActive": false,
    "taskState": "on",
    "mode": "manual",
    "allHomed": true,
    "interpState": "idle",
    "taskPaused": false,
    "mdiCommand": "G0 X0 Y0 Z0"
  },
  "axisPose": {
    "x": 0,
    "y": 0,
    "z": 0,
    "a": 0,
    "b": 0,
    "c": 0
  },
  "dro": {
    "x": 0,
    "y": 0,
    "z": 0,
    "a": 0,
    "b": 0,
    "c": 0
  },
  "gcode": {
    "currentLine": 1,
    "activeRowLine": 1,
    "activeExecution": "idle | F 3600.0 | cycle 1/10 | sample 10 | linuxcnc-task-motion-hal-wasm"
  },
  "canvas": {
    "threeReady": "true",
    "threeSelectedView": "iso",
    "threePathPoints": "2",
    "threeExecutedPathPoints": "1",
    "threeToolExecutionTraceSource": "linuxcnc_tp_samples_or_task_motion_hal_feedback"
  }
}
```


09-open-file-loaded 我验证 Open 文件按钮

通过隐藏 file input 实际上传本地 fixture/test-program.ngc，页面加载为 operator-file 程序。

截图: /home/meswork/cnc_wams/qa/web-rtcp-5axis-site-test/output/working7-full-functional-evidence/09-open-file-loaded.png



```
{
  "runState": "idle",
  "machineProfile": "xyzac-trt",
  "machine": {
    "powerOn": true,
    "estopActive": false,
    "taskState": "on",
    "mode": "auto",
    "allHomed": true,
    "interpState": "idle",
    "taskPaused": false,
    "mdiCommand": "G0 X0 Y0 Z0"
  },
  "axisPose": {
    "x": 0,
    "y": 0,
    "z": 5,
    "a": 0,
    "b": 0,
    "c": 0
  },
  "dro": {
    "x": 0,
    "y": 0,
    "z": 5,
    "a": 0,
    "b": 0,
    "c": 0
  },
  "gcode": {
    "currentLine": 3,
    "activeRowLine": 3,
    "activeExecution": "ready | F 30.0 | cycle 0/1 | sample 0 | linuxcnc-interpretor-wasm"
  },
  "canvas": {
    "threeReady": "true",
    "threeSelectedView": "iso",
    "threePathPoints": "3",
    "threeExecutedPathPoints": "1",
    "threeToolExecutionTraceSource": "linuxcnc_tp_samples_or_task_motion_hal_feedback"
  }
}
```

10-run-ready 我验证 Run Ready

Run Ready 完成 power/home/auto/source/session 前置条件，准备进入 Task/HAL 程序执行。

截图: /home/meswork/cnc_wams/qa/web-rtcp-5axis-site-test/output/working7-full-functional-evidence/10-run-ready.png



```
{
  "runState": "idle",
  "machineProfile": "xyzac-trt",
  "machine": {
    "powerOn": true,
    "estopActive": false,
    "taskState": "on",
    "mode": "auto",
    "allHomed": true,
    "interpState": "idle",
    "taskPaused": false,
    "mdiCommand": "G0 X0 Y0 Z0"
  },
  "axisPose": {
    "x": 0,
    "y": 0,
    "z": 0,
    "a": 0,
    "b": 0,
    "c": 0
  },
  "dro": {
    "x": 0,
    "y": 0,
    "z": 0,
    "a": 0,
    "b": 0,
    "c": 0
  },
  "gcode": {
    "currentLine": 1,
    "activeRowLine": 1,
    "activeExecution": "idle | F 3600.0 | cycle 4/40 | sample 40 | linuxcnc-task-motion-hal-wasm"
  },
  "canvas": {
    "threeReady": "true",
    "threeSelectedView": "iso",
    "threePathPoints": "3",
    "threeExecutedPathPoints": "1",
    "threeToolExecutionTraceSource": "linuxcnc_tp_samples_or_task_motion_hal_feedback"
  }
}
```

11-run-realtime-path 我验证刀具实时执行路径

RUN 后 G-code 当前行、DRO、Task/HAL runtime feedback、canvas executedPathPoints 和当前段高亮同步变化。

截图: /home/meswork/cnc_wams/qa/web-rtcp-5axis-site-test/output/working7-full-functional-evidence/11-run-realtime-path.png



```
{
  "runState": "running",
  "machineProfile": "xyzac-trt",
  "machine": {
    "powerOn": true,
    "estopActive": false,
    "taskState": "on",
    "mode": "auto",
    "allHomed": true,
    "interpState": "reading",
    "taskPaused": false,
    "mdiCommand": "G0 X0 Y0 Z0"
  },
  "axisPose": {
    "x": 0,
    "y": 0,
    "z": 2.50968,
    "a": 0,
    "b": 0,
    "c": 0
  },
  "dro": {
    "x": 0,
    "y": 0,
    "z": 2.50968,
    "a": 0,
    "b": 0,
    "c": 0
  },
  "gcode": {
    "currentLine": 4,
    "activeRowLine": 4,
    "activeExecution": "running | F 200.0 | cycle 79/790 | sample 790 | linuxcnc-task-motion-hal-wasm"
  },
  "canvas": {
    "threeReady": "true",
    "threeSelectedView": "iso",
    "threePathPoints": "3",
    "threeExecutedPathPoints": "1",
    "threeToolExecutionTraceSource": "linuxcnc_tp_samples_or_task_motion_hal_feedback"
  }
}
```

12-pause-resume-step 我验证暂停、继续和单步

PAUSE/RESUME/STEP 的状态、interpState、taskPaused 和 Task/HAL singleStepping 均已验证。

截图: /home/meswork/cnc_wams/qa/web-rtcp-5axis-site-test/output/working7-full-functional-evidence/12-pause-resume-step.png



```
{
  "runState": "paused",
  "machineProfile": "xyzac-trt",
  "machine": {
    "powerOn": true,
    "estopActive": false,
    "taskState": "on",
    "mode": "auto",
    "allHomed": true,
    "interpState": "paused",
    "taskPaused": true,
    "mdiCommand": "G0 X0 Y0 Z0"
  },
  "axisPose": {
    "x": 0,
    "y": 0,
    "z": 1.94521,
    "a": 0,
    "b": 0,
    "c": 0
  },
  "dro": {
    "x": 0,
    "y": 0,
    "z": 1.94521,
    "a": 0,
    "b": 0,
    "c": 0
  },
  "gcode": {
    "currentLine": 4,
    "activeRowLine": 4,
    "activeExecution": "paused | F 200.0 | cycle 98/980 | sample 980 | linuxcnc-task-motion-hal-wasm"
  },
  "canvas": {
    "threeReady": "true",
    "threeSelectedView": "iso",
    "threePathPoints": "3",
    "threeExecutedPathPoints": "1",
    "threeToolExecutionTraceSource": "linuxcnc_tp_samples_or_task_motion_hal_feedback"
  }
}
```

13-stop-idle 我验证 STOP 停止

STOP 后 interpreter 返回 idle，进给速度清零，Task/HAL status loop 停止。

截图: /home/meswork/cnc_wams/qa/web-rtcp-5axis-site-test/output/working7-full-functional-evidence/13-stop-idle.png



```
{
  "runState": "stopped",
  "machineProfile": "xyzac-trt",
  "machine": {
    "powerOn": true,
    "estopActive": false,
    "taskState": "on",
    "mode": "auto",
    "allHomed": true,
    "interpState": "idle",
    "taskPaused": false,
    "mdiCommand": "G0 X0 Y0 Z0"
  },
  "axisPose": {
    "x": 0,
    "y": 0,
    "z": 1.94521,
    "a": 0,
    "b": 0,
    "c": 0
  },
  "dro": {
    "x": 0,
    "y": 0,
    "z": 1.94521,
    "a": 0,
    "b": 0,
    "c": 0
  },
  "gcode": {
    "currentLine": 4,
    "activeRowLine": 4,
    "activeExecution": "stopped | F 200.0 | cycle 99/990 | sample 990 | linuxcnc-task-motion-hal-wasm"
  },
  "canvas": {
    "threeReady": "true",
    "threeSelectedView": "iso",
    "threePathPoints": "3",
    "threeExecutedPathPoints": "1",
    "threeToolExecutionTraceSource": "linuxcnc_tp_samples_or_task_motion_hal_feedback"
  }
}
```

14-manual-jog-axis-values 我验证手动点动和机床轴值

X-/X+/Y-/Y+ 均实际改变对应轴值，DRO 和 axisPose 同步。

截图: /home/meswork/cnc_wams/qa/web-rtcp-5axis-site-test/output/working7-full-functional-evidence/14-manual-jog-axis-values.png



```
{
  "runState": "stopped",
  "machineProfile": "xyzac-trt",
  "machine": {
    "powerOn": true,
    "estopActive": false,
    "taskState": "on",
    "mode": "manual",
    "allHomed": true,
    "interpState": "idle",
    "taskPaused": false,
    "mdiCommand": "G0 X0 Y0 Z0"
  },
  "axisPose": {
    "x": 0,
    "y": 0,
    "z": 1.94521,
    "a": 0,
    "b": 0,
    "c": 0
  },
  "dro": {
    "x": 0,
    "y": 0,
    "z": 1.94521,
    "a": 0,
    "b": 0,
    "c": 0
  },
  "gcode": {
    "currentLine": 4,
    "activeRowLine": 4,
    "activeExecution": "stopped | F 200.0 | cycle 104/1040 | sample 1040 | linuxcnc-task-motion-hal-wasm"
  },
  "canvas": {
    "threeReady": "true",
    "threeSelectedView": "iso",
    "threePathPoints": "3",
    "threeExecutedPathPoints": "1",
    "threeToolExecutionTraceSource": "linuxcnc_tp_samples_or_task_motion_hal_feedback"
  }
}
```

15-mdi-execution 我验证 MDI 执行过程

MDI 输入、表单提交、历史按钮和底部 MDI_RUN 都执行到 store/runtime，并写入历史。

截图: /home/meswork/cnc_wams/qa/web-rtcp-5axis-site-test/output/working7-full-functional-evidence/15-mdi-execution.png



```
{
  "runState": "stopped",
  "machineProfile": "xyzac-trt",
  "machine": {
    "powerOn": true,
    "estopActive": false,
    "taskState": "on",
    "mode": "mdi",
    "allHomed": true,
    "interpState": "idle",
    "taskPaused": false,
    "mdiCommand": "G90 X12.5 Y-4 Z1.25 F900"
  },
  "axisPose": {
    "x": 12.5,
    "y": -4,
    "z": 1.25,
    "a": 0,
    "b": 0,
    "c": 0
  },
  "dro": {
    "x": 12.5,
    "y": -4,
    "z": 1.25,
    "a": 0,
    "b": 0,
    "c": 0
  },
  "gcode": {
    "currentLine": 4,
    "activeRowLine": 0,
    "activeExecution": ""
  },
  "canvas": {
    "threeReady": "true",
    "threeSelectedView": "iso",
    "threePathPoints": "1",
    "threeExecutedPathPoints": "1",
    "threeToolExecutionTraceSource": "linuxcnc_tp_samples_or_task_motion_hal_feedback"
  }
}
```

16-overrides-hal 我验证倍率和 HAL 输入

Rapid/Feed/Spindle 倍率和 Limits/Block/M1 均通过按钮实际改变状态，并在诊断中显示 last HAL effect。

截图: /home/meswork/cnc_wams/qa/web-rtcp-5axis-site-test/output/working7-full-functional-evidence/16-overrides-hal.png



```
{
  "runState": "stopped",
  "machineProfile": "xyzac-trt",
  "machine": {
    "powerOn": true,
    "estopActive": false,
    "taskState": "on",
    "mode": "manual",
    "allHomed": true,
    "interpState": "idle",
    "taskPaused": false,
    "mdiCommand": "G90 X12.5 Y-4 Z1.25 F900"
  },
  "axisPose": {
    "x": 0,
    "y": 0,
    "z": 1.94521,
    "a": 0,
    "b": 0,
    "c": 0
  },
  "dro": {
    "x": 0,
    "y": 0,
    "z": 1.94521,
    "a": 0,
    "b": 0,
    "c": 0
  },
  "gcode": {
    "currentLine": 4,
    "activeRowLine": 0,
    "activeExecution": ""
  },
  "canvas": {
    "threeReady": "true",
    "threeSelectedView": "iso",
    "threePathPoints": "1",
    "threeExecutedPathPoints": "1",
    "threeToolExecutionTraceSource": "linuxcnc_tp_samples_or_task_motion_hal_feedback"
  }
}
```

17-spindle-coolant 我验证主轴和冷却

FWD/REV/STOP、Flood、Mist 均受 power gate 控制并实际更新状态。

截图: /home/meswork/cnc_wams/qa/web-rtcp-5axis-site-test/output/working7-full-functional-evidence/17-spindle-coolant.png



```
{
  "runState": "stopped",
  "machineProfile": "xyzac-trt",
  "machine": {
    "powerOn": true,
    "estopActive": false,
    "taskState": "on",
    "mode": "manual",
    "allHomed": true,
    "interpState": "idle",
    "taskPaused": false,
    "mdiCommand": "G90 X12.5 Y-4 Z1.25 F900"
  },
  "axisPose": {
    "x": 0,
    "y": 0,
    "z": 1.94521,
    "a": 0,
    "b": 0,
    "c": 0
  },
  "dro": {
    "x": 0,
    "y": 0,
    "z": 1.94521,
    "a": 0,
    "b": 0,
    "c": 0
  },
  "gcode": {
    "currentLine": 4,
    "activeRowLine": 0,
    "activeExecution": ""
  },
  "canvas": {
    "threeReady": "true",
    "threeSelectedView": "iso",
    "threePathPoints": "1",
    "threeExecutedPathPoints": "1",
    "threeToolExecutionTraceSource": "linuxcnc_tp_samples_or_task_motion_hal_feedback"
  }
}
```

18-session-fullscreen 我验证会话和 Full 按钮

Save/Restore 通过 OPFS 或 fallback 存储恢复 profile/程序/UI 状态, Full 切换 preview.fullscreen。

截图: /home/meswork/cnc_wams/qa/web-rtcp-5axis-site-test/output/working7-full-functional-evidence/18-session-fullscreen.png



```
{
  "runState": "stopped",
  "machineProfile": "xyzac-trt",
  "machine": {
    "powerOn": true,
    "estopActive": false,
    "taskState": "on",
    "mode": "manual",
    "allHomed": true,
    "interpState": "idle",
    "taskPaused": false,
    "mdiCommand": "G90 X12.5 Y-4 Z1.25 F900"
  },
  "axisPose": {
    "x": 0,
    "y": 0,
    "z": 1.94521,
    "a": 0,
    "b": 0,
    "c": 0
  },
  "dro": {
    "x": 0,
    "y": 0,
    "z": 1.94521,
    "a": 0,
    "b": 0,
    "c": 0
  },
  "gcode": {
    "currentLine": 4,
    "activeRowLine": 0,
    "activeExecution": ""
  },
  "canvas": {
    "threeReady": "true",
    "threeSelectedView": "iso",
    "threePathPoints": "1",
    "threeExecutedPathPoints": "1",
    "threeToolExecutionTraceSource": "linuxcnc_tp_samples_or_task_motion_hal_feedback"
  }
}
```

19-diagnostics-audit 我验证诊断和 gmoccap 边界

Task policy、INI、Task/HAL、Full boundary、gmoccap comm/HAL/native page 诊断均可读，HAL pin 模型可实际更新页面状态。

截图：/home/meswork/cnc_wams/qa/web-rtcp-5axis-site-test/output/working7-full-functional-evidence/19-diagnostics-audit.png



```
{
  "runState": "stopped",
  "machineProfile": "xyzac-trt",
  "machine": {
    "powerOn": true,
    "estopActive": false,
    "taskState": "on",
    "mode": "manual",
    "allHomed": true,
    "interpState": "idle",
    "taskPaused": false,
    "mdiCommand": "G90 X12.5 Y-4 Z1.25 F900"
  },
  "axisPose": {
    "x": 0,
    "y": 0,
    "z": 1.94521,
    "a": 0,
    "b": 0,
    "c": 0
  },
  "dro": {
    "x": 0,
    "y": 0,
    "z": 1.94521,
    "a": 0,
    "b": 0,
    "c": 0
  },
  "gcode": {
    "currentLine": 4,
    "activeRowLine": 0,
    "activeExecution": ""
  },
  "canvas": {
    "threeReady": "true",
    "threeSelectedView": "iso",
    "threePathPoints": "1",
    "threeExecutedPathPoints": "1",
    "threeToolExecutionTraceSource": "linuxcnc_tp_samples_or_task_motion_hal_feedback"
  }
}
```