

Touchscreen Operating Instructions

Learning, monitoring, alarms, review, storage, and troubleshooting

Daily workflow

- 1 Select a motor** Tap Motor 1-4 or allow the selector inputs to choose it.
- 2 Connect or simulate** Connect the monitor interface module or enable Simulator
- 3 Learn a good cycle** Set Startup delay, arm learning, run a representative cut, and stop. Learn is only done once after setup and will retain settings until learn is needed for a new setup or tooling change.
- 4 Monitor production** Watch load, Cut, Warning, Alarm, No Cut, and Smart zone status.
- 5 Review and record** Scroll the stopped Monitor trace or open a saved CSV file.

Installation and wiring help

Open System Parameters (All Motors) and tap Install & Wiring Help for deployment, board setup, pin assignment, calibration, sketch generation, and electrical wiring. This is password protected and is only for Factory use.

Two levels of tabs

Motor Monitoring

Motor 1-4 each retain their own learned reference, thresholds, Smart zones, alarm state, Monitor review, and CSV Viewer context.

System Parameters

Shared settings include graph scaling, storage, enabled motor count, selector behavior, and both CH340 Chip connections. Normal sensitivity stays on each motor's Monitor page.

Motor selector behavior

- Enable Automatically follow CH340 Chip motor selector inputs to make the visible tab follow Selector Bit 0 and Bit 1 while stopped.
- Disable it to keep reviewing a different motor while the hardware selector changes.
- A motor that reports RUN is always selected so the correct learned profile and Smart zones are used.

Touch number entry

Tap Startup delay, Cut, Warning, or Alarm to open the large keypad. Apply is enabled only for a valid value. Small spinner arrows are intentionally hidden.

Connecting

Choose COM port and baud under System Parameters and tap Connect there. Successful board connections are remembered and restored automatically at startup.

Learn a representative good cutting cycle

1

Choose the motor

Confirm the correct motor tab or selector-input combination.

2

Set Startup delay

Exclude normal acceleration and inrush from learned cutting load.

3

Arm Learn Cycle

The app waits for RUN; it can also be armed during a running cycle.

4

Run the complete cut

After the delay, the highest filtered load is captured.

5

Stop the motor

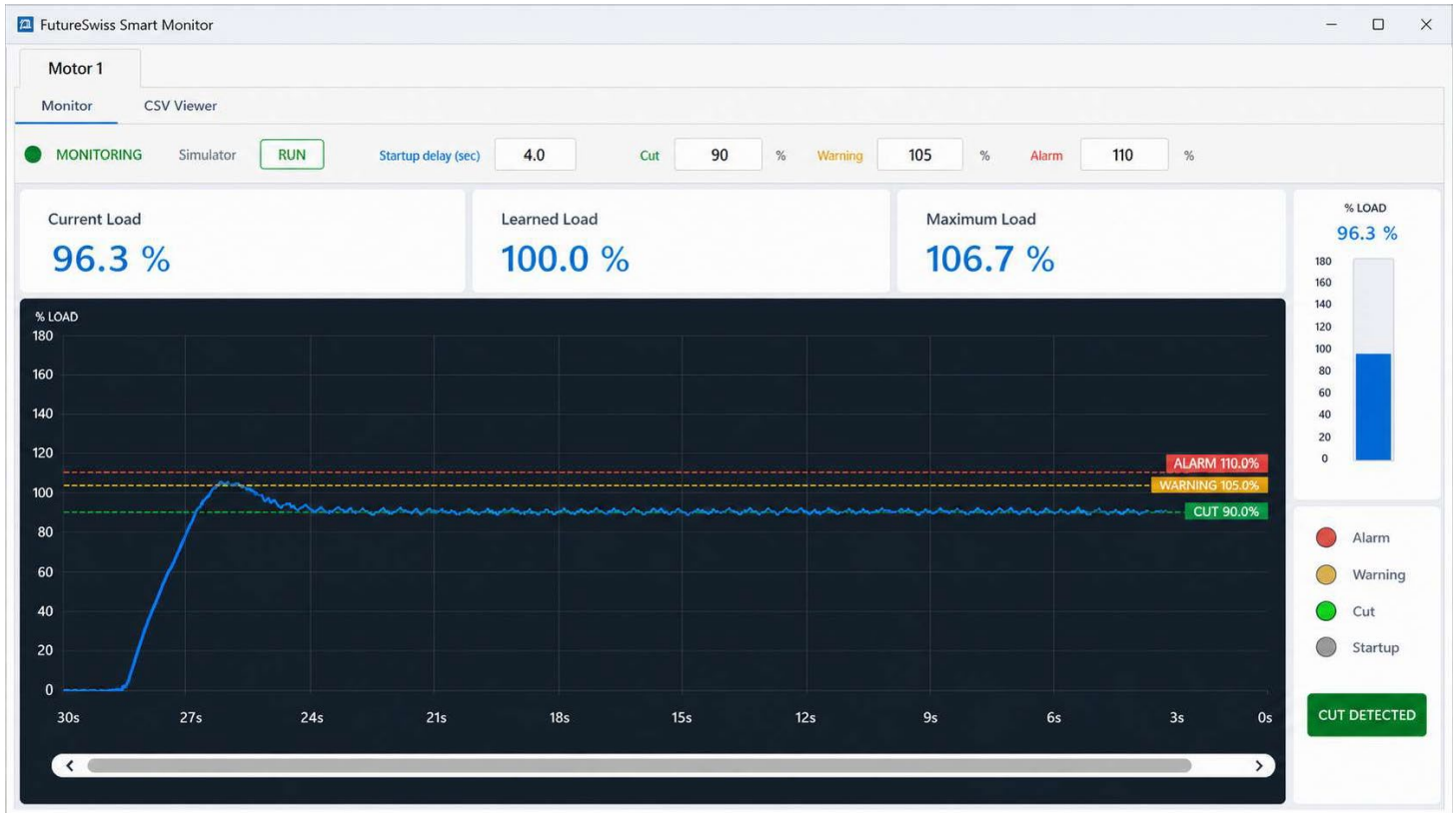
RUN-off saves the maximum as that motor's 100% learned reference.

Learning rules

Cancel Learn abandons the armed or active learning cycle. A cycle that ends before Startup delay saves no reference. Arming a new Learn cycle clears the old learned reference and calculated lines until the replacement completes.

Setting	Default	Meaning
Cut detected	90%	Green cut proof and status
Warning	110%	Yellow warning and one alert sound
Alarm	120%	Red alarm and one alert sound

One learned reference with full-width thresholds



Blue load trace

Every new RUN clears the old trace. The graph shows a fixed 30-second window while retaining the complete RUN.

Threshold lines

Green is Cut, yellow is Warning, and red is Alarm. Regular mode uses one learned reference.

Stopped review

Use the bottom scrollbar after RUN-off. The far-right position snaps to the final recorded timestamp.

Example values are illustrative. Use approved settings for the selected motor.

When one RUN contains multiple cuts

- Open Smart Setup beside Alarm and enable from 1 to 10 sections.
- Each section has start/end time after Startup delay, sensitivity 1-10, and its own Cut, Warning, and Alarm percentages.
- After learning a good cycle, stop the motor and drag each pair of vertical handles around the intended cut.
- Use Learn This Zone for one section or Learn All Smart Zones on Monitor.
- A learned section reference is frozen. Moving its lines later changes timing only; press Learn again to replace the reference.

Sensitivity

Higher sensitivity follows smaller and faster load changes. Lower sensitivity smooths short spikes before evaluating that zone's thresholds.

During production

Only samples between a zone's vertical lines are evaluated. If a zone ends without Cut, No Cut is raised even if another zone detected a cut.

Editing and learning lockout

Zone handles lock while **RUN** is active. Smart regions hide during learning. While Smart is enabled, the unused regular Cut, Warning, and Alarm boxes are visibly grayed.

Multiple cuts in one motor RUN



S1, S2, and S3

Each shaded region monitors only the trace between its two vertical boundaries.

Local learned lines

Every zone has frozen green Cut, yellow Warning, and red Alarm segments.

Zone alerts

Load Status identifies the zone responsible for Warning, Alarm, or No Cut.

The example uses three zones; Smart Setup supports one to ten zones per motor.

What the display means

- The operator display uses load percent. By default, 5 V is 100% load and 10 Vis 200% load.
- The right Load Meter changes color with status. Its saved slider sets the dial maximum: midpoint 100%, far right 200%, without changing monitoring data.
- The graph time axis begins at RUN-on. Smart-zone times still begin after Startup delay.
- Graph upper headroom defaults to 3%. The graph expands beyond the nominal 200% scale whenever a load or threshold is higher, so Alarm stays visible.

Live auto-scale

Off: scale follows learned thresholds. On: it also follows the highest load in the current window. In both modes, configured threshold lines remain inside the plot.

Lower graph limit

Enable the cut-zone lower limit to omit low readings. At 0%, the axis starts at Cut; at 20%, it starts at 80% of Cut.

Normal sensitivity slider

The Monitor-page slider runs from 1 (smoothest) to 10 (most responsive), defaults to 5, and is saved per motor. It is hidden while Smart mode uses zone sensitivity.

Raw voltage

Show raw signal voltage adds a troubleshooting readout. It does not change the normal load-percent monitoring logic.

Status priority and reset behavior

Result	Behavior
Cut	Green; clears at next RUN start
Warning	Yellow; remains until Reset Alarms
Alarm	Red; remains until Reset Alarms
No Cut	Orange; remains until Reset Alarms

- Warning, Alarm, and No Cut remain visible even after load falls or another cycle begins.
- Reset Alarms is enabled only after RUN is off and clears the software latches and D3-D5.
- A RUN pulse that ends before Startup delay is ignored and cannot create Cut, Warning, Alarm, or No Cut.
- Smart alerts name the triggering zone; CH340 Chip outputs remain global regardless of which zone triggered.

Stack-light priority

The dedicated stack-light board displays only the highest result: green for Cut, yellow for Warning, red for Alarm or No Cut, and off when no result is latched.

Per-motor output isolation

Purple means Watch Mode ON

Tap Watch Mode on a motor screen to force that motor's monitor-board 03, 04, and 05 outputs off. The purple button identifies the protected motor at a glance.

Watch all motors

Watch All is one toggle. Tap blue OFF to enable Watch Mode for every configured motor. When it is purple and ON, tap it again to restore normal 03-05 operation for all motors.

What changes - and what does not

Function	Behavior while Watch Mode is ON
Graph, load meter, learning, and Smart mode	Continue normally
Status, alerts, CSV, and history	Continue normally
Dedicated USB stack-light board	Continues normally; not disabled

Saved separately for each motor

Each motor remembers its own Watch Mode setting across tab changes and app restarts. This lets one motor remain isolated while another uses the normal machine outputs.

Before turning Watch Mode off

Verify that the machine is safe to receive signals. Turning Watch Mode off immediately applies the motor's current latched Cut, Warning, Alarm, or No Cut state.

Stopped Monitor and CSV Viewer

Stopped Monitor

RUN-off retains every sample at the original time scale. Scroll longer cycles in 30-second views; the next RUN replaces this on-screen review for that motor.

CSVViewer

Open LoadPercent CSV data. New Smart CSV files restore zone boundaries and frozen learned threshold segments; older files remain readable without Smart metadata.

Logging modes

- Manual: Start CSV Log arms one file. RUN-off writes MotorStopped, flushes, and pauses; the next RUN resumes until Stop CSV Log is pressed.
- Automatic: Auto CSV log each motor cycle creates and closes one file per RUN.
- CSV metadata includes motor, load scale, Startup delay, learned reference, thresholds, and Smart-zone settings.

Storage layout

Choose a Data Storage root under System Parameters. Automatic logs go to Logs. Completed-run history goes to History/Motor 1-4/date. Manual file dialogs also begin in Logs. Back up this folder according to plant policy.

Simulator and saved settings

Simulator

Each **RUN** starts low, smoothly rises and falls through inrush, settles, then cuts at 2.5s. Continuous uses 12s/20s runs, 5s stops, and a final 1.8s low-load finish before reset.

Remembered settings

The app saves each motor's learned values, thresholds, Smart zones, Startup delay, normal sensitivity, Watch Mode, scaling, storage, logging, and selector-follow setting. Active alarm latches are not restored after restart.

Quick checks

No COM port

Reconnect USB, close controller-board Serial Monitor, tap Refresh, and check Device Manager.

Wrong motor tab

Check selector wiring, motor count, and Automatically follow motor selector inputs.

No Cut alarm

Confirm RUN exceeded Startup delay and the load crossed that mode's Cut threshold.

Missing graph end

Move the scrollbar fully right; it snaps to the last recorded timestamp.

Help will not open

Keep both PDF guide files beside FutureSwissSmartMonitor.exe.

Communication reliability

The serial reader continues in the background. If communication drops, try a short shielded USB cable or powered hub and disable Windows USB selective suspend for the affected hub.