

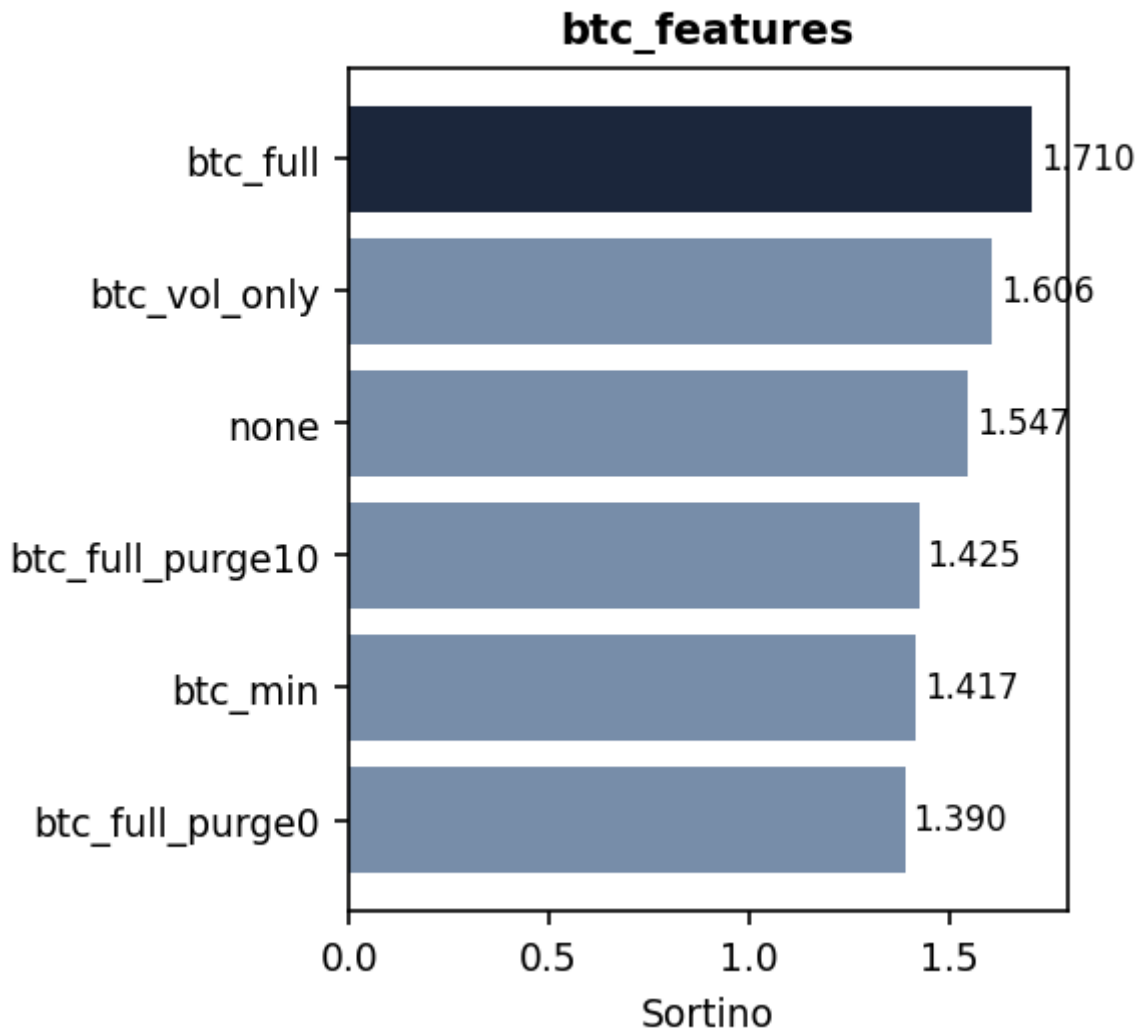
FTF Ablation Report

ATR0.5_1.5_H4 — btc_features

1 FACTORS	150 RESULTS	0 ERRORS	3h53m DURATION
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Run ID	ftf_20260501_230526_2483f9_ATR0.5_1.5_H4
Git SHA	4a39e665
Started	2026-05-01 23:05:56.207873+00:00
Cryptos	UNIUSDC, OPUSDC, ARBUSDC, AAVEUSDC, LDOUSDC
Folds / Trials	5 folds × 50 HPO trials
Cost	15 bps

Sortino by Variant (winner = dark)



Factor	Winner	Primary (Sortino)	95% CI	Verdict	Metrics agreeing
btc_features	btc_full	1.739	[1.0905, 2.3851]	NOT SIG.	0/4

Lock rule: a factor is **LOCKED** only when at least 2 metrics (sortino / expectancy / total_return / win_rate) show BH-adjusted $p < 0.05$ AND $|\text{Cohen's } d| \geq 0.3$ in the winner direction. Paired t-test on matched (crypto, fold) cells (Issue #595 Phase A).

Pairwise Comparisons — Primary metric (Sortino, paired BH-corrected)

Factor	Winner	vs	Mean A	Mean B	p-adj (BH)	Cohen's d	Sig.
btc_features	btc_full	btc_full_purge0	1.739	1.443	0.6194	0.37	NO
btc_features	btc_full	btc_full_purge10	1.770	1.473	0.6194	0.28	NO
btc_features	btc_full	btc_min	1.710	1.449	0.6194	0.26	NO
btc_features	btc_full	btc_vol_only	1.770	1.606	0.6194	0.16	NO

btc_features	btc_full	none	1.710	1.586	0.6194	0.20	NO
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Multi-metric Significance Matrix

Per-metric verdict of winner vs each alternative. ✓ = BH $p < 0.05$ AND $|d| \geq 0.3$ in winner direction. ~ = significant but small effect. ✗ = not significant.

Factor	Pair	Sortino	Expectancy	Total Return	Win Rate
btc_features	btc_full vs btc_full_purge0	✗ p=0.619 d=+0.37	✗ p=0.701 d=+0.11	✗ p=0.729 d=+0.36	✗ p=0.854 d=+0.09
	btc_full vs btc_full_purge10	✗ p=0.619 d=+0.28	✗ p=0.150 d=+0.45	✗ p=0.832 d=+0.16	✗ p=0.242 d=+0.43
	btc_full vs btc_min	✗ p=0.619 d=+0.26	✗ p=0.286 d=+0.32	✗ p=0.729 d=+0.26	✗ p=0.366 d=+0.31
	btc_full vs btc_vol_only	✗ p=0.619 d=+0.16	✗ p=0.286 d=+0.34	✗ p=0.949 d=+0.03	✗ p=0.337 d=+0.34
	btc_full vs none	✗ p=0.619 d=+0.20	✗ p=0.094 d=+0.61	✗ p=0.889 d=+0.08	✗ p=0.154 d=+0.57

Performance Summary — Couche C (économique)

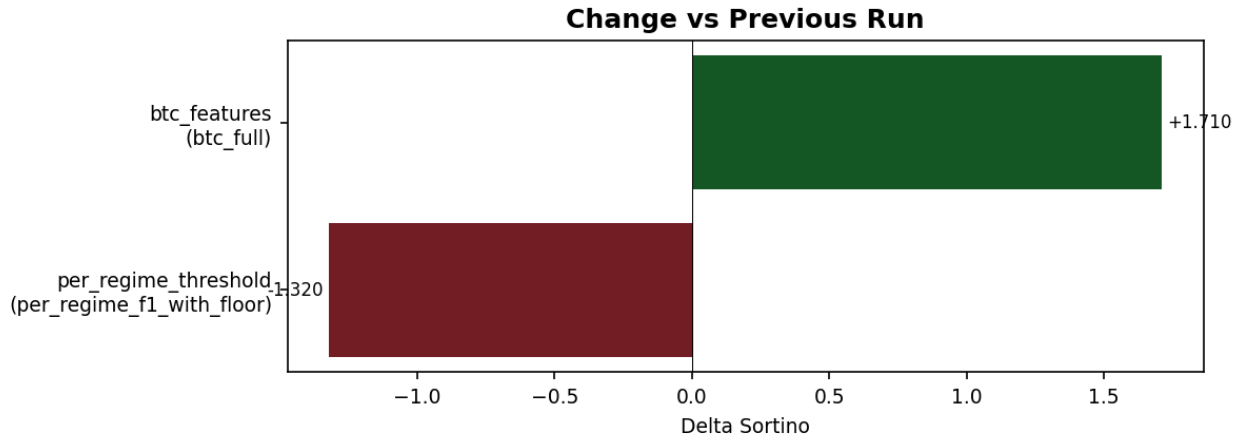
Factor	Winner	Sortino	Std	IQR	Sharpe	Calmar	Trades	Trades/ mo	Win Rate	Max DD	Return %	PF
btc_features	btc_full	1.710	1.548	2.693	4.478	53.026	847	17.30	64.5%	-8.8%	29.8%	5.90

All Variants

Factor	Variant	Sortino	Std	Trades	Win Rate	Max DD	Return %
btc_features	btc_full	1.710	1.548	847	64.5%	-8.8%	29.8%
btc_features	btc_vol_only	1.606	1.534	876	59.3%	-10.2%	30.3%
btc_features	none	1.547	1.449	1032	57.5%	-10.3%	28.2%
btc_features	btc_full_purge10	1.425	1.621	1072	57.7%	-10.5%	27.4%
btc_features	btc_min	1.417	1.365	823	62.1%	-9.4%	25.3%
btc_features	btc_full_purge0	1.390	1.420	818	62.1%	-9.9%	24.3%

Comparison vs Previous Run

Previous: ftf_20260430_194027_3d0171_ATR0.5_1.5_H4



Factor	Variant	Prev	Curr	Delta	Trades Prev	Trades Curr
btc_features	btc_full	None	1.710	1.710 ↑	None	847
btc_features	btc_vol_only	None	1.606	1.606 ↑	None	876
btc_features	none	None	1.547	1.547 ↑	None	1032
btc_features	btc_full_purge10	None	1.425	1.425 ↑	None	1072
btc_features	btc_min	None	1.417	1.417 ↑	None	823
btc_features	btc_full_purge0	None	1.390	1.390 ↑	None	818
per_regime_threshold	per_regime_f1_with_floor	1.320	None	-1.320 ↓	1037	None
per_regime_threshold	per_regime_expectancy	1.598	None	-1.598 ↓	948	None
per_regime_threshold	per_regime_f1	1.626	None	-1.626 ↓	1043	None
per_regime_threshold	coarse_3regime	1.723	None	-1.723 ↓	1026	None
per_regime_threshold	none	1.767	None	-1.767 ↓	1073	None

Red Flags

- per_regime_threshold/per_regime_f1_with_floor: Sortino dropped -1.320 (from 1.320 to None)
- per_regime_threshold/per_regime_expectancy: Sortino dropped -1.598 (from 1.598 to None)
- per_regime_threshold/per_regime_f1: Sortino dropped -1.626 (from 1.626 to None)
- per_regime_threshold/coarse_3regime: Sortino dropped -1.723 (from 1.723 to None)
- per_regime_threshold/none: Sortino dropped -1.767 (from 1.767 to None)

ML Metrics — Couche A (signal modèle)

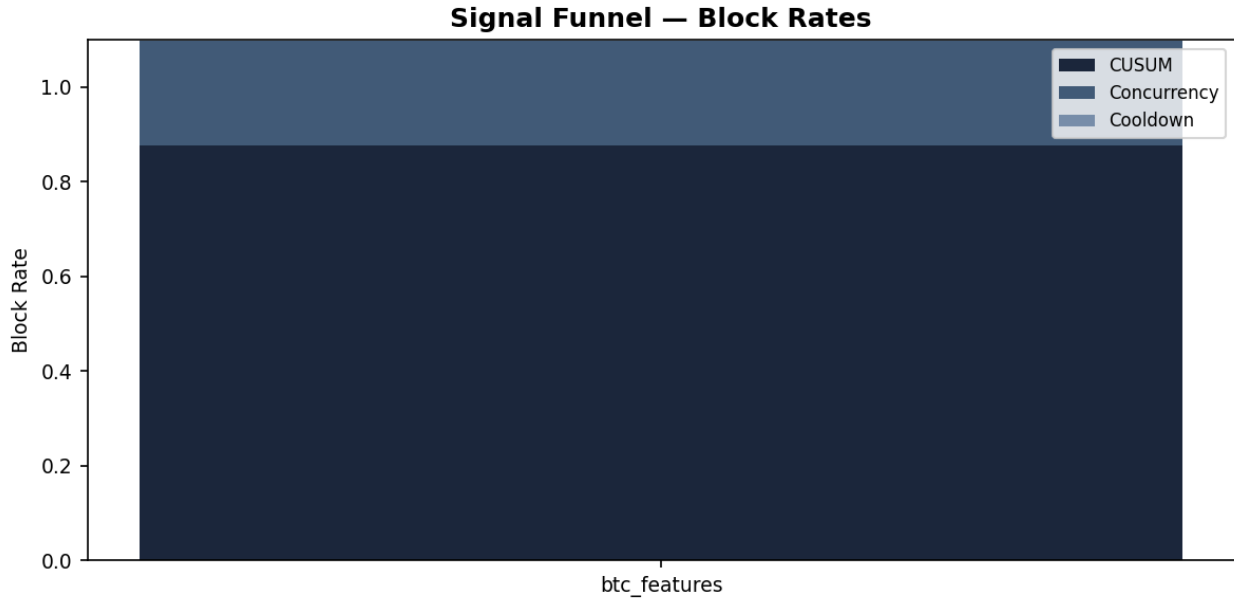
Qualité discriminante du modèle par factor x variant. Un levier classé "signal-restoring" doit bouger ces métriques, pas seulement le débit (Couche B) ou la qualité économique (Couche C).

Factor	Variant	f1_buy	precision	recall	AUC	f1_macro	Brier	ECE	Δ f1	overfit gap	acti rate
btc_features	btc_full_purge0	0.433	0.431	0.449	0.732	0.652	0.1248	0.0000	0.319	0.050	0.19
btc_features	btc_full	0.432	0.424	0.452	0.732	0.650	0.1257	0.0000	0.317	0.047	0.19
btc_features	btc_vol_only	0.426	0.430	0.436	0.728	0.648	0.1268	0.0000	0.315	0.048	0.18
btc_features	none	0.425	0.425	0.436	0.732	0.648	0.1252	0.0000	0.315	0.043	0.18
btc_features	btc_min	0.424	0.414	0.454	0.730	0.646	0.1259	0.0000	0.313	0.049	0.19
btc_features	btc_full_purge10	0.423	0.429	0.433	0.729	0.647	0.1258	0.0000	0.314	0.045	0.18

Brier = écart quadratique moyen entre p(BUY) et y_true (plus bas = mieux). **ECE** (Expected Calibration Error) = écart moyen |confiance – accuracy| par bin de 10% (plus bas = mieux calibré). Perfect classifier : Brier = 0, ECE = 0.

Signal Funnel – Couche B (débit)

Survival par étage de filtre. `survival` = BUYs survivant / raw_buy. Un levier qui fait grimper `survival` sans bouger la Couche A (ML) augmente le débit d'opportunités mais pas la qualité du signal.



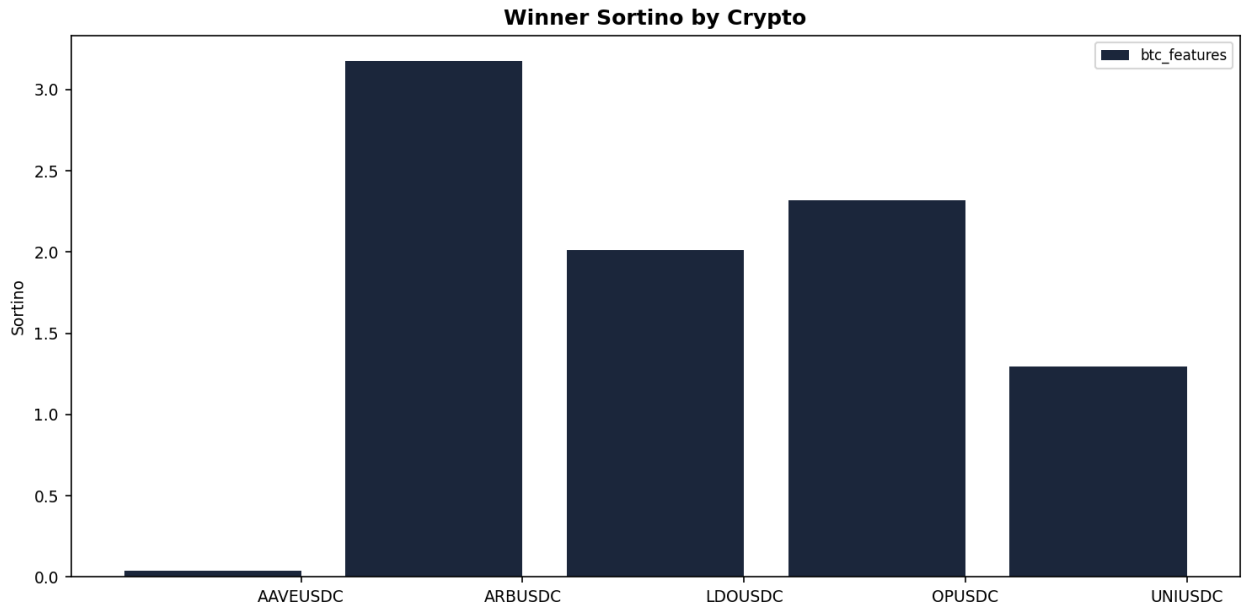
Factor	Variant	raw_buy	CUSUM block	CUSUM survival	Conc. block	Conc. survival	Cooldown	Total survival	Train Samples
btc_features	btc_min	1173	0.878	0.122	0.217	0.783	0.000	0.783	25729
btc_features	btc_full	1223	0.877	0.123	0.222	0.778	0.000	0.778	25705
btc_features	btc_full_purge0	1241	0.874	0.126	0.227	0.773	0.000	0.773	25683
btc_features	btc_vol_only	1231	0.873	0.127	0.242	0.758	0.000	0.758	25679
btc_features	none	1538	0.878	0.122	0.251	0.749	0.000	0.749	25729
btc_features	btc_full_purge10	1657	0.875	0.125	0.254	0.746	0.000	0.746	25705

Stability by Fold

Sortino Stability by Fold

	btc_features				
	Fold 3	Fold 4	Fold 5	Fold 6	Fold 7
btc_full	2.77	0.59	1.22	1.40	2.34
btc_full_purge0	1.71	0.74	1.06	1.40	1.85
btc_full_purge10	1.76	0.41	1.43	1.55	1.76
btc_min	1.91	0.55	1.29	1.37	1.97
btc_vol_only	2.40	0.57	1.24	1.43	1.98
none	2.33	0.59	1.33	1.46	2.02

Performance by Crypto



Factor	Variant	Crypto	Sortino	Trades	Win Rate	Max DD	Return %
btc_features	btc_full	AAVEUSDC	0.039	155	61.8%	-11.3%	1.4%
btc_features	btc_full	ARBUSDC	3.176	258	63.3%	-10.8%	51.3%
btc_features	btc_full	LDOUSDC	2.012	173	64.8%	-9.0%	40.8%
btc_features	btc_full	OPUSDC	2.320	137	66.5%	-6.1%	35.4%
btc_features	btc_full	UNIUSDC	1.296	124	65.6%	-7.0%	24.4%
btc_features	btc_full_purge0	AAVEUSDC	-0.222	165	52.8%	-15.7%	-5.1%
btc_features	btc_full_purge0	ARBUSDC	2.128	196	66.8%	-7.9%	40.6%
btc_features	btc_full_purge0	LDOUSDC	1.686	157	61.6%	-9.4%	28.3%
btc_features	btc_full_purge0	OPUSDC	1.969	168	64.3%	-8.3%	29.0%
btc_features	btc_full_purge0	UNIUSDC	1.126	132	63.0%	-9.2%	23.6%
btc_features	btc_full_purge10	AAVEUSDC	-0.465	203	44.9%	-20.1%	-7.2%
btc_features	btc_full_purge10	ARBUSDC	2.012	194	69.1%	-6.9%	37.3%
btc_features	btc_full_purge10	LDOUSDC	1.595	161	64.1%	-7.8%	36.1%
btc_features	btc_full_purge10	OPUSDC	2.275	253	57.3%	-8.3%	37.5%
btc_features	btc_full_purge10	UNIUSDC	1.331	261	50.4%	-11.5%	26.4%
btc_features	btc_min	AAVEUSDC	-0.188	181	55.3%	-15.8%	-4.4%
btc_features	btc_min	ARBUSDC	2.008	194	69.5%	-7.8%	39.4%
btc_features	btc_min	LDOUSDC	1.934	165	63.3%	-7.6%	38.4%
btc_features	btc_min	OPUSDC	1.750	148	58.6%	-7.8%	25.8%
btc_features	btc_min	UNIUSDC	1.583	135	63.7%	-7.9%	27.1%
btc_features	btc_vol_only	AAVEUSDC	-0.247	159	47.2%	-18.6%	-4.6%

btc_features	btc_vol_only	ARBUSDC	2.642	200	64.2%	-8.3%	52.5%
btc_features	btc_vol_only	LDOUSDC	1.925	132	69.5%	-6.6%	35.6%
btc_features	btc_vol_only	OPUSDC	1.910	169	58.1%	-9.3%	30.0%
btc_features	btc_vol_only	UNIUSDC	1.637	216	56.0%	-9.5%	35.5%
btc_features	none	AAVEUSDC	-0.216	184	51.0%	-15.3%	-4.8%
btc_features	none	ARBUSDC	2.490	242	64.0%	-8.7%	48.2%
btc_features	none	LDOUSDC	1.661	215	56.7%	-9.3%	32.4%
btc_features	none	OPUSDC	2.241	211	56.7%	-9.3%	35.3%
btc_features	none	UNIUSDC	1.559	180	59.3%	-9.1%	29.9%

Configuration Snapshot

BASE_ENV at run start (immutable)

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{
  "CVN_ADAPTIVE_EVENT_ENGINE": "0",
  "CVN_ATR_PERIOD": "14",
  "CVN_BINARY_CLASSIFICATION": "1",
  "CVN_BUY_BETA": "1.0",
  "CVN_CALIBRATION_METHOD": "isotonic",
  "CVN_CLASS_BALANCING": "1",
  "CVN_CLEANLAB_CV_FOLDS": "2",
  "CVN_CLEANLAB_FOLD_BUDGET_S": "60",
  "CVN_CLEANLAB_MAX_DROP_PCT": "5.0",
  "CVN_CLEANLAB_MODE": "off",
  "CVN_CLEANLAB_REWEIGHT_FLOOR": "0.5",
  "CVN_CUSUM_AUTO_CALIBRATE": "0",
  "CVN_CUSUM_THRESHOLD_H": "3.0",
  "CVN_CUSUM_TRAINING_MODE": "enabled",
  "CVN_DEFAULT_HISTORY_MONTHS": "24",
  "CVN_DEFAULT_N_FOLDS": "5",
  "CVN_DEFAULT_N_TRIALS": "50",
  "CVN_DEFAULT_PTE": "ATR0.5_1.5_H4",
  "CVN_DRIFT_ACTION": "alert",
  "CVN_DRIFT_THRESHOLD_PSI": "0.2",
  "CVN_EARLY_STOPPING_ROUNDS": "150",
  "CVN_EMBARGO_BARS": "10",
  "CVN_FEATURE_SELECTION_K_OVERSHOOT_POLICY": "fail",
  "CVN_FI_REFERENCE_DEPTH": "10",
  "CVN_FI_REFERENCE_ROUNDS": "500",
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  "CVN_LABEL_SMOOTH_EPS_HOLD": "0.0",
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  "CVN_MAX_CONCURRENT": "1",
  "CVN_MAX_DAILY_DD_PCT": "10.0",
  "CVN_MAX_FEATURES": "0",
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  "CVN_ORDER_TYPE": "market",
  "CVN_PERFOLD_PREFLIGHT": "1",
  "CVN_PIPELINE_RUNNER_MODE": "disabled",
  "CVN_POSITION_SIZE_PCT": "1.0",
  "CVN_PREFLIGHT_ENABLED": "1",
  "CVN_PREFLIGHT_STEP_FI_REFERENCE_ENABLED": "1",
  "CVN_PURGE_BARS": "20",
  "CVN_REGIME_BOOST_FACTOR": "5.0",
  "CVN_SAMPLE_WEIGHTING": "uniform",
  "CVN_SIGNAL_COOLDOWN_SECONDS": "0",
  "CVN_SLIPPAGE_BASE_BPS": "5",
  "CVN_SLIPPAGE_IMPACT_FACTOR": "0.001",
  "CVN_SL_MULT": "0.5",
  "CVN_SYSTEM_STATUS": "active",
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  "CVN_TIMEFRAME": "15m",
  "CVN_TP_MULT": "1.5",
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"CVN_USE_META_LABEL": "0",  
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