

EQID v2 Strategy Documentation

Anchored VWAP (AVWAP) v11 — Intraday Momentum System

This document provides a **complete, beginner-friendly guide** to the EQID v2 algorithmic trading system for NSE India equities. It covers every parameter, every indicator, every decision rule, and every piece of infrastructure — from raw data to live order placement.

Attribute	Value
Exchange	NSE India (National Stock Exchange)
Instrument	Equities — Cash Segment
Entry Timeframe	15-minute candles
Exit Resolution	5-minute candles (higher precision)
Session	09:15 – 15:30 IST
Strategy Style	Intraday Momentum (all positions closed by EOD)
Direction	Both LONG and SHORT
ML Layer	Optional LogisticRegression meta-label filter
Backtest Result	591 trades, 78.3% win rate, ML P&L: █14,41,948

1. What Is EQID v2?

EQID v2 is a fully automated, intraday algorithmic trading system built for the Indian stock market. It scans hundreds of NSE-listed stocks every 15 minutes during market hours, identifies high-probability trading setups using a combination of price-action patterns and technical indicators, and manages every trade with strict risk controls.

Key Capabilities

- Scans 200+ stocks every 15 minutes for SHORT and LONG setups
- Classifies impulse candles as MODERATE ($0.45\text{--}1.0\times \text{ATR}$) or HUGE ($\geq 1.6\times \text{ATR}$)
- Validates signals with 6 technical filters: ADX, RSI, Stochastic, EMA, Volume, AVWAP
- Manages exits automatically: Stop-Loss, Target, Breakeven, Trailing Stop, EOD close
- Optional Machine Learning layer (ML Meta-Label) to skip low-probability trades
- Runs in backtest mode (historical) or live mode (real-time signals + execution)

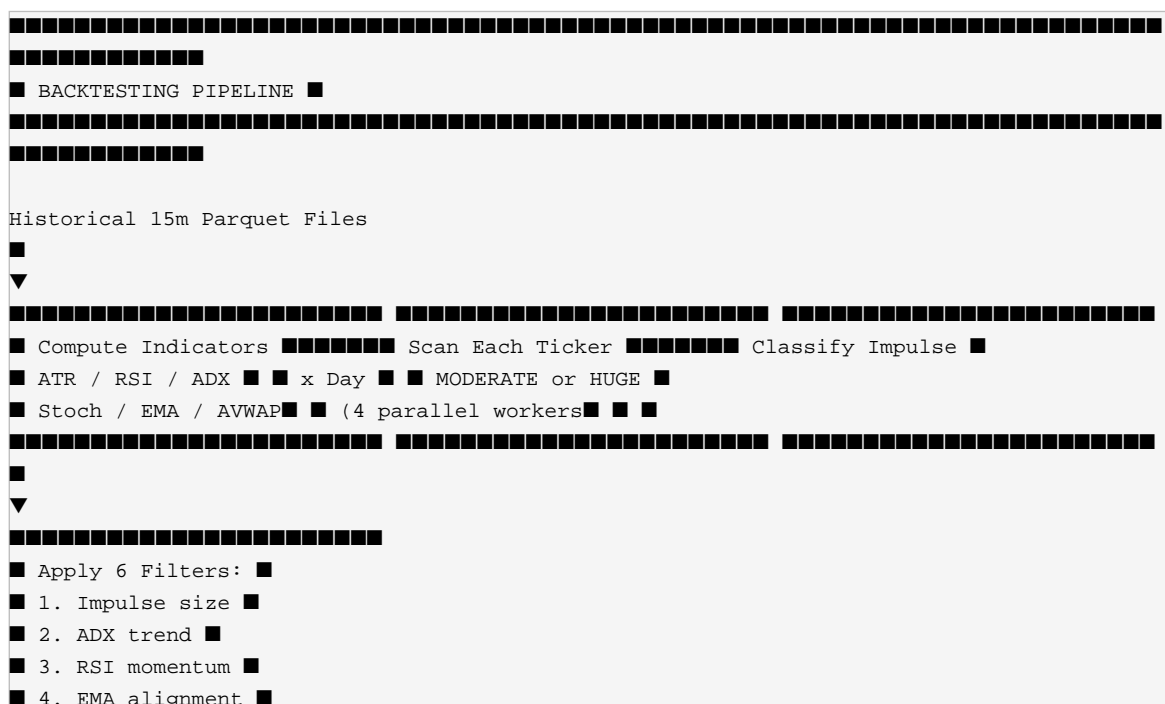
The Core Idea (Explained for Beginners)

"When a stock shows a strong directional candle during a trending session, it tends to continue in that direction after a brief pause."

Think of it like this: imagine a stock suddenly drops hard in a 15-minute candle — big red candle, strong volume. If the market trend (ADX), momentum (RSI, Stochastic), moving averages (EMA), and AVWAP all confirm the bearish bias, then there is likely more downside coming. We wait for a tiny bounce (which fails), then enter SHORT when the price breaks the bounce low.

2. System Architecture

2.1 Backtest Flow



RSI (Relative Strength Index)	14 bars	Whether a stock is overbought (>70) or oversold (<30)	SHORT: RSI ≤ 55, falling. LONG: RSI ≥ 45, rising. Confirms momentum.
Stochastic (%K / %D)	14/3	Where current close sits in the recent high/low range	SHORT: %K < %D, ≤ 75. LONG: %K > %D, ≥ 25. Bearish/bullish confirmation.
ADX (Avg Directional Index)	14 bars	How strong the current trend is (regardless of direction)	Only direction, not strength. ADX ≥ 25 AND rising for 2 bars. Avoids chopping.
EMA 20 & EMA 50 (Exp. Moving Avg)	20 / 50 bars	Smoothed price trends. EMA 20 is faster; EMA 50 is slower	SHORT: EMA20 < EMA50 (bearish stack), close < EMA20. LONG: EMA20 > EMA50, close > EMA20.
AVWAP (Anchored VWAP)	Day-anchored	Volume-weighted avg price from market open	SHORT: price below AVWAP (sellers in control). LONG: price above AVWAP.
Volume SMA	20 bars	Average trading volume over last 20 bars	Impulse bar must have volume ≥ 1.2× average (confirms big play).

4. SHORT Entry Logic — Step by Step

Setup A: MODERATE Impulse

Step	Rule	Explanation
1 — Detect C1	RED candle, body 0.45–1.0× ATR, close within bottom 25% of range	After a 25% or larger candle. Not tiny, not huge. Sellers in control.
2a — Option 1	Next bar's low breaks C1 low minus buffer	Immediate continuation. Bears pile in right away.
2b — Option 2	C2 is tiny green (≤ 0.20× ATR) below AVWAP, then C3 pulls back to C2 low	As C3 pulls back to C2 low, then continuation lower.
3 — Trend Filter	ADX ≥ 25 rising, RSI ≤ 55 falling, Stoch K < D ≤ 75, EMA20 < EMA50, close < EMA20	50% or more of conditions met. Unusually bearish.
4 — AVWAP Rule	Price touched AVWAP from below AND rejected (OR VAP posted resistance below AVWAP)	AVWAP-based resistance below AVWAP, rejected the rally.
5 — Volume	Impulse bar volume ≥ 1.2× 20-bar avg	Big volume on the impulse = institutional selling pressure.
6 — Enter SHORT	Close of entry bar < trigger price	Bar closes confirming the breakdown. Enter at bar close (or next open).

Setup B: HUGE Impulse

Step	Rule	Explanation
1 — Detect C1	Body ≥ 1.6× ATR OR range ≥ 2.0× ATR (big red candle)	Unusually large red candle — panic selling or strong distribution.
2 — Failed Bounce	1–3 small green bars (body ≤ 0.20× ATR) that touch AVWAP but close below it	Bulls tried to recover but AVWAP held as resistance.
3 — Break Low	A bar's low breaks the bounce window's lowest low	The failed bounce price still below AVWAP. Enter on the breakdown.
4–6	Same trend filter, AVWAP, and volume rules as Setup A	

SHORT Entry Parameters

Parameter	Value	Plain English
Stop-Loss	0.75%	If price rises 0.75% against you → exit to limit loss
Profit Target	1.20%	If price falls 1.20% in your favor → take profit
Breakeven Trigger	0.50%	After 0.50% favorable move, slide SL to entry (safe exit)
Trailing Stop	0.30%	After BE armed, SL follows price at 0.30% distance
Risk:Reward	1:1.6	Target is 1.6× the risk (1.20% / 0.75%)
Position Size	<div> <div> \$50,000 margin × 5× leverage = \$2,50,000 notional </div> </div>	

5. LONG Entry Logic — Step by Step

Setup A: MODERATE Impulse

Step	Rule	Explanation
1 — Detect C1	GREEN candle, body 0.30–1.0x ATR (lower bar than C1057), close within top 25% of C1057. C1057 has a lower threshold (0.30x vs 0.4x).	
2a — Option 1	Next bar's high breaks C1 high plus buffer	Immediate bullish continuation.
2b — Option 2	Small red pullback stays above AVWAP, then next bar breaks pullback AVWAP as support, then continues up.	
3 — Trend Filter	ADX ≥ 25 rising, RSI ≥ 45 rising, Stoch K > D ≥ 25, EMA20 > EMA55, everything EMA20 on AVWAP	Bullish trend.
4 — AVWAP Rule	Price stayed above AVWAP (AVWAP acting as support, not as a WAP). Buyers in institutional control.	
5 — Volume	Impulse bar volume ≥ 1.2x 20-bar avg	Institutional buying confirms the move.
6 — Enter LONG	Close of entry bar > trigger price	Bar closes above breakout. Enter at close.

LONG Entry Parameters

Parameter	Value	Plain English
Stop-Loss	0.75%	If price falls 0.75% below entry → exit to limit loss
Profit Target	1.50%	If price rises 1.50% → take profit (better R:R than SHORT)
Breakeven Trigger	0.60%	After 0.60% favorable move, slide SL to entry
Trailing Stop	0.30%	SL trails 0.30% below the best high seen
Risk:Reward	1:2.0	Target is 2x the risk (1.50% / 0.75%)
Position Size	█1,00,000 margin × 5x leverage = █5,00,000 notional	

6. Exit Management

Exit Types (Priority: SL > Target when both hit same bar)

Exit Type	When It Fires	What Happens
TARGET	Price reaches profit target level	Close trade for full profit. Best outcome.
SL (Stop-Loss)	Price hits stop-loss level	Close trade to cap loss at max risk.
BE (Breakeven)	SL was moved to entry, then price reverses and hits entry	Exit at entry. Typically tiny profit due to 0.01% pad.
TRAIL (Trailing Stop)	After BE armed, best price reverses by 0.30%	Close 80% partial profits. Better than BE.
EOD (End of Day)	15:30 IST with position still open	Forced close — no overnight holds. Whatever the market gives.

Breakeven + Trailing Stop — How It Works

Phase	Condition	SL Location
Phase 1: Initial	Trade just entered	Fixed at entry ± stop_pct (e.g., entry × 0.9925 for LONG)
Phase 2: BE Armed	Price moved be_trigger_pct (0.50%/0.60%) in our favor + tiny pad (0.01%) → protects capital	Moved to entry
Phase 3: Trailing	BE is armed, price continues favorably	SL = best_price_seen × (1 – trail_pct). Follows price.
Phase 4: Exit	Price reverses and hits current SL	Exit with locked-in gain (or at entry for worst-case BE)

7. Complete Parameter Reference

7.1 Impulse Detection

Parameter	SHORT	LONG	Description
mod_impulse_min_atr	0.45	0.30	Minimum candle body for MODERATE impulse (as multiple of ATR)
mod_impulse_max_atr	1.00	1.00	Maximum candle body for MODERATE impulse
huge_impulse_min_atr	1.60	1.60	Minimum body for HUGE impulse classification
huge_impulse_min_range_atr	2.00	2.00	Alternative: min full candle range for HUGE
close_near_extreme_max	0.25	0.25	Close must be within 25% of candle's high or low
small_counter_max_atr	0.20	0.20	Max body size for pullback/bounce candles (counter-bars)

7.2 Trend Filters

Parameter	SHORT	LONG	Description
adx_min	25.0	25.0	Minimum ADX value. Below 25 = no clear trend → skip trade
adx_slope_min	1.25	0.80	ADX must rise by this much over 2 bars (trend strengthening)
rsi_max_short	55.0	—	RSI must be ≤ 55 for SHORT (below midpoint = bearish lean)
rsi_min_long	—	45.0	RSI must be ≥ 45 for LONG (above midpoint = bullish lean)
stochk_max	75.0	95.0	Stochastic %K upper limit
stochk_min	—	25.0	Stochastic %K lower limit (LONG only)
EMA alignment	EMA20 < EMA50	EMA20 > EMA50	Moving average trend confirmation

7.3 Risk & Exit Parameters

Parameter	SHORT	LONG	Description
stop_pct	0.75%	0.75%	Maximum loss per trade before forced exit
target_pct	1.20%	1.50%	Profit target per trade (LONG is more generous)
be_trigger_pct	0.50%	0.60%	Favorable move needed to arm breakeven protection
be_pad_pct	0.01%	0.01%	Tiny padding so BE exit gives slight profit, not zero
trail_pct	0.30%	0.30%	Trailing stop distance from best price seen
slippage_pct	0.05%	0.05%	Market impact cost on entry and exit (5 basis points)
commission_pct	0.03%	0.03%	Brokerage + STT estimate (3 basis points round-trip)

7.4 AVWAP Validation Parameters

Parameter	Value	Description
require_avwap_rule	True	Turn AVWAP validation on/off. Default is ON.
avwap_touch	True	Require that price touched AVWAP (high/low) but close rejected it
avwap_min_consec_closes	2	Minimum consecutive closes on the correct side of AVWAP
avwap_mode	any	'any' = touch OR consecutive closes. 'both' = both required.
avwap_dist_atr_mult	0.25	At entry, price must be ≥ 0.25× ATR away from AVWAP (avoid AVWAP hugging)

7.5 Volume & Volatility Filters

Parameter	Value	Description
volume_min_ratio	1.2x	Impulse bar volume must be at least 1.2x the 20-bar average volume
volume_sma_period	20	Number of bars to average for baseline volume calculation
use_atr_pct_filter	True	Enable the ATR% filter to skip low-volatility stocks
atr_pct_min	0.20%	Stock's ATR must be $\geq 0.20\%$ of its price (ensures tradeable moves)

7.6 Session, Time & Trade Limits

Parameter	Value	Description
session_start	09:15 IST	Market open — no signals before this
session_end	15:30 IST	Market close — force-close all positions
signal_windows	09:15–14:30	Only generate new entry signals in this window
min_bars_left_after_entry	4	Need ≥ 4 bars left after entry (so trade has time to play out)
max_trades_per_ticker_per_day	1	Prevent overtrading one stock — max 1 trade per ticker per day
topn_per_day	10	Keep only the top 10 highest quality signals per day
buffer_abs	■0.05	Minimum absolute trigger buffer (prevents triggering on noise)
buffer_pct	0.02%	Percentage trigger buffer (whichever is larger is used)

7.7 Portfolio & Leverage (Combined Runner)

Parameter	Value	Description
POSITION_SIZE_RS_SHORT	■50,000	Margin deployed per SHORT trade
POSITION_SIZE_RS_LONG	■1,00,000	Margin deployed per LONG trade (2x SHORT)
INTRADAY_LEVERAGE	5x	MIS (intraday) leverage from broker. 5x = 5x the margin as notional.
PORTFOLIO_START_CAPITAL	■10,00,000	Starting portfolio capital for simulation
Notional SHORT	■2,50,000	■50,000 \times 5x = actual market exposure per SHORT
Notional LONG	■5,00,000	■1,00,000 \times 5x = actual market exposure per LONG

8. ML Meta-Label Overlay

The ML layer is **optional** — it sits on top of the base strategy and acts as an additional filter. It was trained using **Triple Barrier Labeling**, a technique where the outcome of each trade (WIN or LOSE) is determined by looking forward in time and seeing which barrier (target or stop-loss) was hit first.

8.1 How It Filters Trades

Step	What Happens
1. Signal Generated	Base strategy finds a candidate trade
2. Feature Extraction	5 features extracted: quality_score, atr_pct, rsi_centered, adx_norm, side
3. ML Prediction	Model predicts p_win (probability this trade will be profitable)
4. Hard Gate	If p_win < 0.60 → SKIP the trade entirely

5. Position Sizing	If $p_win \geq 0.60 \rightarrow$ take trade with confidence multiplier (0.8x to 1.6x)
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8.2 Confidence Multiplier

p_win Range	Multiplier	Meaning
< 0.60	0x (skip)	Too uncertain — do not trade
= 0.60 (threshold)	0.80x	Marginally above threshold — slightly reduced size
0.60 \rightarrow 1.00 (linear)	0.80x \rightarrow 1.60x	Higher confidence = larger position (proportional)
= 1.00	1.60x	Very high confidence — maximum size increase of 60%

8.3 ML Features Explained

Feature	Formula	What It Captures
quality_score	Composite score from strategy (0-3)	Overall signal quality: ADX strength, AVWAP distance, impulse type
atr_pct	ATR / Close price	Relative volatility. High ATR% = more room to move.
rsi_centered	$(RSI - 50) / 50$	RSI normalized to -1...+1 (0 = neutral, +1 = overbought, -1 = oversold)
adx_norm	ADX / 50	Trend strength normalized (0 = no trend, 1 = very strong)
side	+1 for LONG, -1 for SHORT	Direction. Lets model learn if one direction is currently more reliable.

8.4 Training Pipeline (Triple Barrier Labeling)

Step	Description
1. Collect Trades	Run full backtest \rightarrow CSV of all candidate trades
2. Label Creation	For each trade, look 12 bars (60 min) forward in 5-min data: <ul style="list-style-type: none"> • Label=1 if TARGET hit before SL • Label=0 if SL hit first OR timeout • Tie (both same bar) \rightarrow Label=0 (conservative)
3. Train Model	LogisticRegression with balanced class weights. Walk-forward cross-validation.
4. Save Model	meta_model.pkl + meta_features.json (feature order)
5. Apply in Live	avwap_live_signal_generator.py loads model and gates every signal

8.5 Backtest Results with ML Filter

Metric	Base Strategy	ML-Filtered Strategy
Total Trades	591	Fewer (low-quality filtered out)
Win Rate	78.3%	Higher (bad trades removed)
Total P&L	■9,48,948	■14,41,948
P&L Improvement	—	+■4,93,000 (+52%)

9. Live Trading — Risk Controls

Risk Control	Value	Description
Max Daily Loss	■5,000	Once total losses for the day reach ■5,000, stop all new trades

Max Open Positions	10	Never hold more than 10 concurrent positions
Max Capital Deployed	₹5,00,000	Total margin across all open trades capped
Forced Close Time	15:20 IST	10 min before NSE squares off MIS positions automatically
LTP Poll Interval	5 seconds	Check live price every 5 seconds for SL/target monitoring
Slippage Applied	5 bps	Entry price adjusted by 0.05% to simulate real fill slippage
Paper Trade Mode	Default ON	File: PAPER_TRADE_TRUE.py — simulates all trades, no real orders

10. File-by-File Map

Core Strategy (avwap_v11_refactored/)

File	Purpose
avwap_common.py	Shared backbone: StrategyConfig (60+ parameters), all indicator functions, slippage model, Trade
avwap_short_strategy.py	SHORT-specific: red impulse classifier, AVWAP rejection check, SHORT exit simulator, scan_one
avwap_long_strategy.py	LONG-specific: green impulse classifier, AVWAP support check, LONG exit simulator, scan_one_o
avwap_combined_runner.py	Orchestrator: runs both sides in parallel (4 workers), 5-min exit resolution, leverage P&L, 28 charts,

Live Execution

File	Purpose
avwap_live_signal_generator.py	Runs every 15m: scans all tickers, applies ML gate, deduplicates signals, writes signals CSV. 1328
avwap_trade_execution_PAPER_TRADE_TRUE.py	PAPER executor: watchdog monitors signals CSV, simulates trades with LTP polling, enforces all ris
avwap_trade_execution_PAPER_TRADE_FALSE.py	REAL executor: same as above but places actual orders via Zerodha Kite API
authentication_v2.py	Kite session login with TOTP 2FA, saves access token for the day

ML Pipeline

File	Purpose
ml_meta_filter.py	ML inference wrapper: MetaLabelFilter class, predict_pwin(), confidence_multiplier(), heuristic fallb
eqidv2_meta_label_triple_barrier.py	Creates training labels from 5-min candles using triple-barrier method
eqidv2_meta_train_walkforward.py	Walk-forward training of LogisticRegression model, outputs meta_model.pkl
eqidv2_ml_backtest.py	Applies trained ML filter to historical trades CSV, computes P&L improvement

Data Pipeline

File	Purpose
trading_data_..._parquet_stocksonly.py	Downloads 5-min + 15-min OHLCV data, saves as parquet per ticker
eqidv2_eod_scheduler_for_15mins_data.py	Scheduled 15-min data refresh every 15 mins during market hours
filtered_stocks.py	Curated universe of NSE stocks to scan (symbols list)

11. Performance Metrics Explained

Metric	Formula	What 'Good' Looks Like	What It Tells You
Win Rate	Winning trades / Total trades	> 55%	What % of trades are profitable
Profit Factor	Gross profit / Gross loss	> 1.5	For every ₹1 lost, how much is made on wins
Sharpe Ratio	$(\text{Mean return} / \text{Std dev}) \times \sqrt{252}$	> 1.0	Risk-adjusted return vs volatility
Sortino Ratio	Like Sharpe, but only penalizes downside vol		Better measure: ignores 'good' upside volatility
Calmar Ratio	Total return / Max drawdown	> 0.5	How much return per unit of worst drawdown pain
Max Drawdown	Worst peak-to-trough capital decline	< 20%	Worst consecutive losing period — tests nerves
Avg Win / Avg Loss	Mean profit of wins / Mean loss of losses	> 1.5	Average win should be significantly larger than loss

12. Glossary

Term	Definition
AVWAP	Anchored Volume-Weighted Average Price — avg price weighted by volume, reset each day at open
ATR	Average True Range — average candle size (volatility) over 14 bars
Impulse candle	A candle with a significantly larger-than-normal body (measured in ATR multiples)
MODERATE	Impulse body 0.30–1.0× ATR with close near the extreme
HUGE	Impulse body $\geq 1.6\times$ ATR or range $\geq 2.0\times$ ATR
BE (Breakeven)	Moving the stop-loss to entry price to protect capital after a favorable move
Trailing stop	A stop-loss that follows price at a fixed distance, only getting tighter
EOD	End-of-day — forced position close at 15:20–15:30 IST
bps (basis points)	1 bps = 0.01%. 5 bps = 0.05%. Common unit for slippage/commissions.
Notional exposure	Capital \times Leverage = actual market exposure (e.g., ₹50k \times 5 \times = ₹2.5L)
MIS	Margin Intraday Square-off — Zerodha's intraday leverage product
Parquet	Columnar binary file format for fast storage/retrieval of large datasets
Walk-forward	Training on past data, testing on unseen future data, rolling the window forward
Triple barrier	ML labeling: trade is WIN if target hit first, LOSS if SL hit first or timeout
p_win	ML model's predicted probability (0–1) that a given trade will be profitable
Quality score	Composite score (0–3) ranking how strong a setup is — used for TopN filtering
Profit factor	Total gross profits \div Total gross losses — >1 means profitable overall

Generated from a full automated code analysis of the EQID v2 codebase. For questions or updates, refer to README_eqidv2.md in the repository.