PSEDYS | TECHNICAL REFERENCE MANUAL V3.0

VO — Volume Oscillator

Technical Reference Manual v1.0

PSEDYS | Complete Edition
EMA_fast(Vol) − EMA_slow(Vol) · Momentum Volume · Zero Cross · Price Confirmation · MTF · Bot vs TradingView

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1. What is VO? Concept

The Volume Oscillator measures the **relative difference between fast and slow average volume** — similar to MACD but applied to volume instead of price. VO > 0 = recent volume greater than long-term average → increased activity. VO < 0 = decreasing volume compared to average.

2. Calculation Formula — Complete

```
VO[i] = (EMA_fast(Volume, fast_period) - EMA_slow(Volume, slow_period))
        / EMA_slow(Volume, slow_period) × 100
```

Standard: fast=5, slow=14 (or 12/26 like MACD)

Some platforms (TradingView): SMA instead of EMA on volume. Check implementation.

Verify bar 14 (first value):

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```
EMA5(Vol)[14] = 3429 contracts  (fast EMA)
EMA14(Vol)[14] = 3096 contracts (slow EMA, seed SMA)

VO = (3429 - 3096) / 3096 × 100 = +10.76%  ✓  (recent volume > average)
```

VO Table bars 14–49:

Bar	EMA5_Vol	EMA14_Vol	VO%	Signal
14	3429	3096	**+10.76**	Increased volume
19	2391	2717	−12.00	Decreased volume
24	3026	2820	+7.31	Increased volume
34	3270	3119	+4.85	Moderate volume
39	2822	3097	−8.88	Decreased volume
49	2851	3038	−6.16	Decreased volume

3. Interpretation and Levels

```
VO > 0:  Recent volume > average volume → increased activity (movement confirmation)
VO < 0:  Recent volume < average volume → decreased activity (less credible movements)
VO > +10%: Significant volume spike
VO < −10%: Significant volume dry-up
```

Zero-line: VO = 0 → fast volume = slow volume (activity equilibrium).

4. Lag and Warm-up

```
First value: slow_period bar = bar 14 (for slow=14)
Warm-up: slow_period bars
Fast EMA lag: ~fast/2 = 2.5 bars
Slow EMA lag: ~slow/2 = 7 bars
VO net lag: similar MACD concept
```

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5. Trading Signals

Breakout Confirmation

```
Price breakout + VO > +10%:
  → Breakout with increased volume → valid

Price breakout + VO < 0:
  → Volume below average → suspect breakout (possible false)
```

Zero Cross

```
VO cross zero bullish (from negative to positive):
  Fast volume exceeds slow average volume → increasing activity
  → Momentum confirmation (not direct entry signal)

VO cross zero bearish:
  Decreasing volumetric activity → caution on price movements
```

Volume-Price Divergence

```
Price rises + VO falls (volume decreases): bullish trend without volumetric support
→ Possible topping, tighten SL

Price falls + VO rises (volume increases): active sells → bearish trend with strength
Or: capitulation (bearish volume climax) → potential bottom
```

Combined Filters

```
# Entry confirmation with VO
entry_confirmed = (
    price_breakout and
    vo > 5 and              # recent volume 5%+ above average
    ema_stack_bullish
)

# Avoid false breakout
skip_entry = vo < 0 and close > resistance  # breakout without volume
```

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6. VO vs RVOL vs OBV — Comparison

Aspect	VO	RVOL	OBV
Type	Smoothed volume oscillator	Instantaneous ratio	Cumulative directional
Smoothing	EMA	None (current bar)	None
Price Direction	No	No	Yes (±volume)
Spike Detection	Moderate (EMA dampens)	Immediate	Not direct
Zero	Fast=slow volume	RVOL=1 (equal to average)	0 (start)

7. MTF and PSEDYS

```
# VO filter
high_activity  = vo > 10     # volume 10%+ above average
low_activity   = vo < -10    # volume 10%+ below average
normal         = -10 < vo < 10

# Entry filter
entry_ok = high_activity and price_bullish  # increased volume + bullish price
```

Level	Timeframe	Usage
Macro	4H	VO > 0 = normal activity; VO > 20 = major event
Meso	1H	VO > 0 for entry confirmation
Entry	5M	RVOL more useful for precise timing

8. Bot vs TradingView Validation

```
□ TradingView: SMA instead of EMA for VO (check exact)
□ Percentage formula: (fast-slow)/slow × 100
□ Absolute variant: fast - slow (without normalization)
□ Standard period: fast=5, slow=14
□ Tolerance: < 0.1%
```

Python Script:

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```
def volume_oscillator(volumes, fast=5, slow=14):
    n = len(volumes)
    kf = 2/(fast+1); ks = 2/(slow+1)
    ema_f = [None]*n; ema_s = [None]*n
    ema_f[fast-1] = sum(volumes[:fast])/fast
    ema_s[slow-1] = sum(volumes[:slow])/slow
    for i in range(fast, n): ema_f[i] = volumes[i]*kf + ema_f[i-1]*(1-kf)
    for i in range(slow, n): ema_s[i] = volumes[i]*ks + ema_s[i-1]*(1-ks)
    vo = [None]*n
    for i in range(slow-1, n):
        if ema_s[i]: vo[i] = (ema_f[i]-ema_s[i])/ema_s[i]*100
    return vo
```

---

9. Practical Exercises

Exercise 1: Price in trend + VO < −15 for 8 bars

Situation: ETH/USDT 4H bullish trend. VO = −18 (volume 18% below average) for 8 consecutive bars.

Answer: Trend on low volume — imminent pullback or consolidation. Persistent negative VO = weakening buying pressure without participation. Trend may continue but is vulnerable. Tighten trailing SL, no position addition. Wait for VO > 0 for fresh entry.

Exercise 2: VO spike at +35% on a pullback bar

Situation: BTC/USDT 5M. 4H bullish trend. Pullback bar (bearish) comes with VO = +35%.

Answer: Aggressive pullback with high volume — SL in danger. Pullback with triple average volume = serious sellers active, not a normal pullback. Check if SL is wide enough (2×ATR). If not, temporarily exit or reduce sizing. If pullback stops quickly and re-enters support area with bullish bar + volume, re-entry.

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10. Cheat Sheet

Concept	Value / Rule
Formula	`(EMA_fast(Vol) - EMA_slow(Vol)) / EMA_slow(Vol) × 100`
Fast/Slow	5/14 (standard) or 12/26
> 0	Recent volume > average → increased activity
< 0	Recent volume < average → decreased activity
> +10%	Volumetric spike
< −10%	Volumetric dry-up
Zero cross bull	Increasing activity → movement confirmation
Breakout confirmation	VO > +5% at breakout = valid
Warm-up	slow_period bars
vs RVOL	VO: smoothed EMA; RVOL: instantaneous
Cause #1 error	SMA vs EMA (TradingView uses SMA)

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