PSEDYS | TECHNICAL REFERENCE MANUAL V3.0

CVD — Cumulative Volume Delta

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Technical Reference Manual v1.0

PSEDYS | Complete Edition
Buy Volume − Sell Volume · Delta per Candle · Cumulative CVD · Divergence · Absorption · Taker vs Maker · MTF

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1. What is CVD? Concept

CVD (Cumulative Volume Delta) measures the **cumulative difference between buy volume (taker buy) and sell volume (taker sell)**. Unlike OBV (which classifies entire bars as bull/bear) or A/D (which uses the Close position), CVD accesses **actual transactional data** — each trade is classified as buy or sell at the tick level.

Taker Buy: Orders that "take" liquidity from the sell order book (bullish aggressors)
Taker Sell: Orders that "take" liquidity from the buy order book (bearish aggressors)

Delta per candle: Buy_Volume − Sell_Volume
- Delta > 0: more active bullish aggressors (buying pressure)
- Delta < 0: more active bearish aggressors (selling pressure)

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2. Calculation Formula — Complete

```
Delta[i] = Buy_Volume[i] − Sell_Volume[i]

CVD[i] = CVD[i-1] + Delta[i]
CVD[0] = Delta[0]   (or started from 0 at an anchor point)
```

Check bar 1:

```
Buy_Vol = 1247, Sell_Vol = 1247
Delta[1] = 1247 − 1247 = 0
CVD[1] = 0

Bar 2: Delta = +500 (more buyers)
CVD[2] = 0 + 500 = +500
```

Example CVD Table:

Bar	Close	Buy Vol	Sell Vol	Delta	CVD
1	100.00	1247	1247	0	0
5	98.07	518	1340	−822	−1287
20	98.69	1985	908	+1077	+854
40	107.96	1472	624	+848	+9523
50	104.05	2706	978	+1728	+4410

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3. CVD Interpretation

```
Rising CVD: dominant cumulative buying pressure
  → Active bullish aggressors → support for bullish trend

Falling CVD: dominant cumulative selling pressure
  → Active bearish aggressors → support for bearish trend

Flat CVD (sideways): balance between taker buy/sell
  → Market without clear direction, market makers absorb

Delta per candle (not cumulative):
  Bullish bar + Delta > 0: confirmation of aggressive buying
  Bullish bar + Delta < 0: price rises "passively" (sell orders consumed slowly, not aggressively
    → Bullish move without conviction → "passive buying"
```

4. CVD vs Price Divergence

```
Bearish Divergence:
  Price makes Higher High + CVD makes Lower High
  → At the new high, less active bullish aggressors
  → "Bearish absorption" — sellers absorb buying without pushing price much
  → Probable bearish reversal

Bullish Divergence:
  Price makes Lower Low + CVD makes Higher Low
  → At the new low, bearish aggressors weaken
  → "Bullish absorption" — buyers absorb selling at lower prices
  → Probable bullish reversal

Absorption:
  Sideways price + CVD drops aggressively: selling pressure absorbed by passive buyers
    → If buyers succeed → imminent bullish breakout
  Sideways price + CVD rises aggressively: buying pressure absorbed by passive sellers
    → If sellers succeed → imminent bearish breakdown
```

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5. Trading Signals

```
Bullish CVD Spike at support:
  Price at support + large positive Delta spike
  → Bullish aggressors enter at support → probable bounce
  Entry Long

Bearish CVD Spike at resistance:
  Price at resistance + large negative Delta spike
  → Bearish aggressors enter at resistance → probable rejection
  Entry Short

CVD Divergence + Structure:
  CHoCH + bullish CVD divergence = strong reversal signal
```

6. CVD vs OBV vs A/D — Comparison

Aspect	CVD	OBV	A/D Line
Required Data	Taker Buy/Sell (tick data)	OHLCV	OHLCV
Classification	Tick-level aggressors	Close direction	CLV × Volume
Precision	Maximum (real buy/sell)	Approximate	Proportional
Availability	Exchange API / Footprint	Any platform	Any platform
Complexity	High (special data)	Simple	Simple

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7. MTF and PSEDYS

```
# CVD from Golden Minute (GM) data
# GM provides candles with buy/sell volumes in some configurations

# Intraday CVD calculation (reset at session or anchored)
def cvd(buy_volumes, sell_volumes, anchor_idx=0):
    n = len(buy_volumes)
    delta = [buy_volumes[i]-sell_volumes[i] for i in range(n)]
    cvd_v = [0]*n
    for i in range(anchor_idx, n):
        cvd_v[i] = (cvd_v[i-1] if i > anchor_idx else 0) + delta[i]
    return cvd_v, delta

# CVD Divergence
def cvd_divergence(closes, cvd_vals, swing_highs):
    """Detect bearish CVD divergence at SH."""
    divs = []
    for i in range(1, len(swing_highs)):
        sh1, sh2 = swing_highs[i-1], swing_highs[i]
        if closes[sh2['idx']] > closes[sh1['idx']]:  # price HH
            if cvd_vals[sh2['idx']] < cvd_vals[sh1['idx']]:  # CVD LH
                divs.append({'type': 'bearish', 'index': sh2['idx']})
    return divs
```

PSEDYS: CVD from GM API (`buy_volume` , `sell_volume` per candle) for screening symbols with strong unidirectional pressure.

8. Validation — Data Sources

```
CVD sources on crypto:
  □ Exchange API WebSocket (taker side from trade data)
  □ Golden Minute (GM) — if it provides buy/sell split
  □ Libraries: ccxt with trade-level data, Bookmap, ATAS, Sierra Chart

Taker classification:
  Trade "buy" (taker buy): execution price = ask → aggressive bullish
  Trade "sell" (taker sell): execution price = bid → aggressive bearish

CAUTION: Some exchanges do not provide taker side directly
  → Approximation: bullish bar (Close > Open) = Buy vol; bearish = Sell vol
  → INFERIOR to real tick data, but usable as a proxy
```

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9. Practical Exercises

Exercise 1: Price at resistance with negative Delta spike

Situation: BTC 5M. Price at resistance 66000. Current bar: Delta = −3200 (massive sell volume). Close = 65800 (slightly below resistance).

Answer: Aggressive bearish absorption — entry Short. Large negative Delta at resistance = bearish aggressors enter massively at 66000. Close below resistance confirms rejection. Entry Short at 65800. SL above 66100. TP at support 64500 or Demand Zone. R:R: (65800-64500)/(66100-65800) = 1300/300 = 4.3 — excellent.

Exercise 2: Rising CVD with falling price

Situation: ETH 1H. Price drops from 3200 to 3050. CVD has risen during the same period (increasing buy pressure). ADX = 18.

Answer: Bullish absorption — prepare Long. Falling price + rising CVD = buyers absorb passive selling. Sellers push price down but buyers absorb. If CVD continues to rise and price stabilizes = imminent bullish breakout. Wait for positive bullish Delta spike + bullish reversal bar for entry Long.

10. Cheat Sheet

Concept	Rule
Delta	`Buy_Volume − Sell_Volume` per candle
CVD	`Σ Delta` (cumulative)
Rising CVD	Cumulative buying pressure
Falling CVD	Cumulative selling pressure
Bearish Div.	Price HH + CVD LH → bearish absorption
Bullish Div.	Price LL + CVD HL → bullish absorption
Absorption	Unilateral pressure absorbed by the opposite side
Delta spike +	Aggressive bullish entry
Delta spike −	Aggressive bearish entry
vs OBV	CVD: real tick; OBV: bar direction
Data Source	Exchange API taker side or GM buy/sell split
Proxy	Close>Open=Buy, Close<Open=Sell (less precise)

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