PSEDYS | TECHNICAL REFERENCE MANUAL V3.0

Ichimoku Kinko Hyo — Technical Reference Manual v1.0

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PSEDYS | Complete Edition

Tenkan · Kijun · Senkou A/B · Chikou · Kumo · TK Cross · Kumo Breakout · Kumo Twist · Signal Classification · MTF · Bot vs TradingView

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1. What is Ichimoku Kinko Hyo? Concept and Philosophy

Ichimoku Kinko Hyo (□□□□□) literally means **“one glance equilibrium chart”** in Japanese. It was created by journalist Goichi Hosoda in the 1930s and published in 1969 after 30 years of testing.

Central philosophical principle: Ichimoku is a **complete system in itself** — it does not require other indicators to generate quality signals. A single Ichimoku chart contains information about trend, momentum, support/resistance, and future perspectives simultaneously.

The 3 unique temporal perspectives:

```
PAST    (Chikou Span):    current price plotted 26 bars back
                          → compare present with past
PRESENT (Tenkan + Kijun): current price equilibrium
                          → evaluate current strength and direction
FUTURE  (Senkou A + B):   cloud projected 26 bars forward
                          → visualize future resistances/supports
```

This is the **only** standard analysis technique that projects an indicator into the future — all others are either present (EMA, MACD) or past (Chikou).

Why it matters in crypto:
- BTC/USDT and major pairs are actively tracked with Ichimoku by Asian traders (Japanese, Korean, Chinese) who dominate crypto volume
- The Ichimoku Cloud functions as an institutional level similar to the daily EMA 200 — many algorithms have orders at the cloud boundary
- Kumo Twists on 4H/1D are macro signals tracked by crypto funds

---

2. The 5 Components — Complete Formulas

2.1 Tenkan-sen (Conversion Line)

```
Tenkan-sen = (Highest(High, 9) + Lowest(Low, 9)) / 2
```

Tenkan-sen is the **midpoint average over 9 bars** — not an average of closes (like EMA/SMA), but the average between the highest High and the lowest Low of the last 9 bars.

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Properties:
- Reacts quickly to price changes (9-bar window)
- When the trend is strong: Tenkan is far from the price (steep slope)
- When the trend stalls: Tenkan becomes flat (High≈Low of the last 9 bars)
- **Flat Tenkan = short-term consolidation** — price oscillates in the same range

Difference from EMA 9:

```
EMA 9:     weighted average of closes → more sensitive to spikes
Tenkan 9:  midpoint (H+L)/2 → more stable, does not move if High/Low remain the same
```

2.2 Kijun-sen (Base Line)

```
Kijun-sen = (Highest(High, 26) + Lowest(Low, 26)) / 2
```

Kijun-sen is the **most important line in the Ichimoku system**. It measures price equilibrium over 26 bars — in Japanese tradition, 26 is the number of trading days in a month.

Properties:
- Major support/resistance level when price touches it after a period away
- **Flat Kijun** = deep consolidation or sideways market — price has not set new extremes over 26 bars
- Kijun in trend = clear slope → strong trend confirmed
- Pullback to Kijun = classic Ichimoku entry opportunity in active trend

Kijun vs EMA 26:

```
Kijun-sen: midpoint (H+L)/2 over 26 bars → does not move at all if High/Low remain in range
EMA 26: moves slightly with each bar (K=7.4%)
→ Kijun is more stable as S/R level, EMA 26 is more responsive as trailing
```

2.3 Senkou Span A (Leading Span A)

```
Senkou Span A = (Tenkan-sen + Kijun-sen) / 2
              → plotted 26 bars AHEAD on the chart
```

Span A is the average between Tenkan and Kijun, **projected 26 bars into the future**. It forms one of the cloud boundaries.

Properties:
- Reacts faster than Span B to trend changes (includes Tenkan with 9-bar window)
- When Span A > Span B: the cloud is green (bullish)
- Rising Span A (calculated now) = future cloud becomes more bullish

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Logic of forward projection:
Hosoda placed Span A 26 bars ahead to visualize **where support/resistance levels will be** in the coming months, not where they have been. This allows the trader to see in advance if the cloud will be thin (easy to penetrate) or thick (strong resistance).

2.4 Senkou Span B (Leading Span B)

```
Senkou Span B = (Highest(High, 52) + Lowest(Low, 52)) / 2
              → plotted 26 bars AHEAD on the chart
```

Span B is the midpoint over 52 bars (2 months of trading in Japanese tradition), projected 26 bars into the future.

Properties:
- Extremely stable — requires 52 bars to change maximum High/Low
- **Flat Span B** = no new extremes set over 52 bars → major S/R level
- Flat Span B = important psychological zones where institutional algorithms have orders
- Cloud thickness = |Span A − Span B| = strength of S/R zone

2.5 Chikou Span (Lagging Span)

```
Chikou Span = Close[current bar]
            → plotted 26 bars BACK on the chart
```

Chikou **has no own formula** — it is simply the current close price, drawn on the chart at the position of 26 bars ago. It allows direct visual comparison of the current price with the context from a month ago.

Chikou Signal:

```
Chikou ABOVE price (26 bars ago):
Close[i] > Close[i-26] → current price higher than last month → bullish

Chikou BELOW price (26 bars ago):
Close[i] < Close[i-26] → current price lower than last month → bearish

Chikou vs Cloud (26 bars ago):
Chikou above the cloud from 26 bars ago → additional bullish confirmation
Chikou below the cloud from 26 bars ago → additional bearish confirmation
```

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3. Kumo (Cloud) — Concept, Color, Thickness, Twist

3.1 Definition

Kumo (□ = cloud) is the **area between Senkou Span A and Senkou Span B**, plotted 26 bars into the future from the current calculated bar. On the chart, both appear simultaneously:

```
"Current" Cloud (bar N):  Span A[N-26] and Span B[N-26]
"Future" Cloud (bar N+26): Span A[N] and Span B[N]
```

This creates the visual effect of a "band" on the chart — a colored area extending into the future.

3.2 Cloud Color

```
GREEN Cloud (bullish Kumo):  Span A > Span B
RED Cloud  (bearish Kumo):  Span B > Span A
```

The cloud color is determined by the Span A / Span B ratio. A green cloud means Span A (more reactive, based on 9+26 bars) is above Span B (more stable, based on 52 bars) → structurally bullish trend.

3.3 Cloud Thickness

```
Thickness = |Span A − Span B|
```

Thickness is the most important aspect of the cloud:

Thickness	Interpretation	Impact in Trading
Thick (large)	Strong S/R zone	Price will encounter significant resistance/support in the cloud
Thin (small)	Weak S/R zone	Cloud is easier to penetrate → breakout likely faster
Twist (Span A = Span B)	Regime change	Potential advance signal of trend change

Relative Thickness:

```
cloud_thickness_pct = abs(span_a - span_b) / close * 100
# > 2% → thick cloud → significant S/R
# < 0.5% → thin cloud → easy breakout
```

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3.4 Kumo Twist — Future Color Change

Kumo Twist occurs when Senkou Span A and Span B cross in the future area (26 bars ahead of the current bar). This signals a **future cloud color change**:

```
GREEN Twist (Span A crosses above Span B in the future):
→ Cloud will become bullish in 26 bars
→ Bullish trend change signal with ~1 month notice

RED Twist (Span B crosses above Span A in the future):
→ Cloud will become bearish in 26 bars
→ Bearish trend change signal with ~1 month notice
```

Kumo Twist is the only standard indicator that provides a predictive signal with fixed notice. Advanced Ichimoku traders use future twists on 4H/1D to anticipate regime changes 4–6 weeks in advance.

---

4. The Ichimoku Temporal Paradox — Past, Present, Future

Ichimoku is the only standard indicator that operates on 3 temporal axes simultaneously. Understanding this concept is essential for correct implementation in the bot.

4.1 Complete Temporal Scheme

```
CHART — What the trader sees at bar N (today):

Bar N-26       Bar N          Bar N+26
   ↓              ↓               ↓
[Chikou plotted] [Tenkan, Kijun] [Cloud plotted]
                [Current Close]   [Span A from bar N]
                                  [Span B from bar N]

Chikou at bar N-26 = Close[N] (today's price, visualized in the past)
Cloud at bar N+26 = Span_A[N] and Span_B[N] (calculated today, visible in the future)
"Current" Cloud at bar N = Span_A[N-26] and Span_B[N-26] (calculated 26 bars ago)
```

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4.2 Practical Implications for the Bot

```
# At bar i (current):

# 1. Tenkan and Kijun = calculated at bar i → PRESENT
tenkan_current  = tenkan[i]
kijun_current   = kijun[i]

# 2. CURRENT Cloud (what the trader sees below/above the current price)
cloud_span_a = span_a[i - 26]   # Calculated 26 bars ago
cloud_span_b = span_b[i - 26]
cloud_top    = max(cloud_span_a, cloud_span_b)
cloud_bottom = min(cloud_span_a, cloud_span_b)

# 3. FUTURE Cloud (bar i+26, visible on the chart to the right)
future_span_a = span_a[i]    # Calculated NOW, plotted at bar i+26
future_span_b = span_b[i]

# 4. Chikou SIGNAL = compare current price with the price 26 bars ago
chikou_bullish = closes[i] > closes[i - 26]

# 5. Chikou vs Cloud = current price versus the cloud from 26 bars ago
cloud_26_ago_a = span_a[i - 52] if i >= 52 else None  # Cloud at bar i-26
cloud_26_ago_b = span_b[i - 52] if i >= 52 else None
```

5. Lag per Component and Warm-up

5.1 Lag of Each Component

Component	Formula	Lag (bars)	Interpretation
Tenkan-sen	Midpoint 9 bars	4.0	Fast — reflects trend ~4 bars back
Kijun-sen	Midpoint 26 bars	12.5	Moderate — reflects trend ~12 bars back
Senkou Span A	(T+K)/2, +26 bars	8.25 + 26 = **34.25**	Calculated with lag, plotted in the future
Senkou Span B	Midpoint 52 bars, +26 bars	25.5 + 26 = **51.5**	Slowest — reflects 2 months back
Chikou Span	Close, −26 bars	**0** (own lag)	Is the current Close, no calculation

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Span A/B Paradox: Although plotted in the future (+26), they are calculated with lag (4–25 bars). Thus, the "visible future" on the chart is actually the balanced past projected.

5.2 Minimum Bars for Each Component

Component	First calculated value	First visible value on chart
Tenkan-sen	Bar 9	Bar 9 (present)
Kijun-sen	Bar 26	Bar 26 (present)
Senkou Span A (calculated)	Bar 26	Bar **52** (26 ahead)
Senkou Span B (calculated)	Bar 52	Bar **78** (26 ahead)
Fully visible Cloud	—	Bar **78**
Chikou	Bar 1	Plotted at bar i-26

```
Absolute minimum warm-up:     78 bars (52 + 26) — fully visible cloud
Recommended warm-up:        100 bars
Production (bot signal):    100+ bars minimum
```

---

6. Complete Numerical Example — 100 Bars

Data: uptrend (0–70 bars), consolidation and continued uptrend (70–100 bars)
Start price: 100.18 → Max price: 122.62 → Final price: 122.46

Manual verification bar 52:

```
High max 9 bars  [bars 44-52]: 108.28
Low  min 9 bars  [bars 44-52]: 103.23
Tenkan = (108.28 + 103.23) / 2 = 105.755  ✓

High max 26 bars [bars 27-52]: 108.28
Low  min 26 bars [bars 27-52]: 103.23
Kijun  = (108.28 + 103.23) / 2 = 105.755  ✓  (same range → Tenkan = Kijun)

Span A (bar 52) = (105.755 + 105.755) / 2 = 105.755  → plotted at bar 78  ✓

High max 52 bars [bars 1-52]:  108.28
Low  min 52 bars [bars 1-52]:   99.76
Span B (bar 52) = (108.28 + 99.76) / 2 = 104.020  → plotted at bar 78  ✓

Cloud at bar 78: Span A (105.755) > Span B (104.020) → GREEN ✓
```

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Key bars table (fully visible cloud from bar 78):

Bar	Close	Tenkan	Kijun	Cloud Top	Cloud Bot	Color	Price vs Cloud
25	106.34	105.665	N/A	N/A	N/A	—	—
52	107.99	105.755	105.755	N/A	N/A	—	—
78	—	—	—	105.755	104.020	GREEN	—
80	119.71	119.715	114.880	106.440	104.700	GREEN	ABOVE ↑
85	120.34	119.860	116.805	109.380	107.410	GREEN	ABOVE ↑
90	120.81	120.240	118.750	111.705	110.075	GREEN	ABOVE ↑
95	122.17	121.380	120.935	114.493	111.995	GREEN	ABOVE ↑
100	122.46	122.140	121.040	115.927	111.995	GREEN	ABOVE ↑

Detected TK Crosses:
- Bar 40: **BEAR TK Cross** — T(105.90) < K(105.92) — consolidation (T≈K, weak signal)
- Bar 53: **BULL TK Cross** — T(106.17) > K(106.16) — trend resumption (both close)

Chikou confirmations (Current Close vs Close from 26 bars ago):
- Bar 31: Close(107.20) > Close_26_ago(101.61) → Chikou ABOVE (+5.5%) ✓
- Bar 71: Close(119.98) > Close_26_ago(103.75) → Chikou ABOVE (+15.6%) ✓ strong
- Bar 100: Close(122.46) > Close_26_ago(116.81) → Chikou ABOVE (+4.8%) ✓

---

7. Trading Signals — The Complete System

7.1 TK Cross (Tenkan × Kijun) — Momentum Signal

Bullish TK Cross:

```
Tenkan crosses above Kijun from below
→ Short-term momentum (9 bars) surpasses medium balance (26 bars)
→ Significance: price accelerates bullishly compared to the monthly average
```

Bearish TK Cross:

```
Tenkan crosses below Kijun from above
→ Short-term momentum falls below medium balance
→ Significance: price decelerates / reverses
```

TK Cross classification based on position relative to the cloud:

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Position at cross	Type	Signal strength
Both ABOVE the cloud	Bullish	**STRONG** (kin = gold signal)
Both INSIDE the cloud	Bullish	**NEUTRAL** (chū signal)
Both BELOW the cloud	Bullish	**WEAK** (jaku signal)
Both ABOVE the cloud	Bearish	**STRONG**
Both INSIDE the cloud	Bearish	**NEUTRAL**
Both BELOW the cloud	Bearish	**WEAK**

7.2 Kumo Breakout (Price × Cloud) — Major Trend Signal

Bullish Kumo Breakout:

```
Close crosses above Cloud Top with closed candle
→ Price has surpassed the equilibrium zone of the last 52 bars
→ Significance: confirmed bullish structural trend
→ Cloud becomes support
```

Bearish Kumo Breakdown:

```
Close crosses below Cloud Bottom with closed candle
→ Price has broken the equilibrium zone downward
→ Significance: confirmed bearish structural trend
→ Cloud becomes resistance
```

Cloud as support/resistance:

```
Price approaches the cloud from above → tests Kumo support
    → Thick cloud: usually withstands the first touch
    → Thin cloud: can be penetrated more easily

Price approaches the cloud from below → tests Kumo resistance
    → Thick cloud: usually rejects
    → Thin cloud: possible bullish breakout with less volume
```

7.3 Kijun-sen Cross (Price × Kijun) — Medium Trend Signal

Bullish Kijun Cross:

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```
Close crosses above Kijun
→ Price surpasses the current month's balance
→ Slower and more reliable signal than TK Cross
→ Maximum strength: cross above the cloud
```

Kijun as a magnet: Price often returns to Kijun after deviation — Kijun acts as a magnetic pole. Pullback to Kijun in an uptrend = classic Ichimoku entry opportunity.

7.4 Chikou Cross (Chikou × Price) — Historical Confirmation

Bullish Chikou Cross:

```
Close[i] surpasses Close[i-26] from below
→ Current price is higher than a month ago
→ Confirmation that the bullish trend is supported in the medium term
```

Chikou vs Cloud (26 bars ago):

```
If Close[i] > max(Span_A[i-52], Span_B[i-52]):
→ Chikou is above the cloud from 26 bars ago → complete bullish confirmation

If Close[i] < min(Span_A[i-52], Span_B[i-52]):
→ Chikou is below the cloud from 26 bars ago → confirmed bearish signal
```

7.5 Kumo Twist — Predictive Signal

Kumo Twist occurs when Span A (calculated now, plotted in +26 bars) crosses Span B:

```
BULLISH Twist (Span A crosses above Span B in the future zone):
→ Cloud WILL TURN GREEN in 26 bars
→ Predictive signal of bullish trend regime change

BEARISH Twist (Span B crosses above Span A):
→ Cloud WILL TURN RED in 26 bars
→ Predictive signal of bearish change
```

Kumo Twist strength:
- Twist on 1D: significant macro regime change
- Twist on 4H: medium trend change
- Twist on 1H/15M: less significant

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7.6 Signal Classification: Strong / Neutral / Weak

Ichimoku classifies each signal based on its position relative to the cloud. This is one of the distinctive features compared to all other indicators:

BULLISH Signals:

#	Condition	Classification
1	TK Bullish Cross above the green cloud	**STRONG**
2	Kumo Bullish Breakout from green cloud	**STRONG**
3	Kijun Cross bullish above the cloud	**STRONG**
4	TK Bullish Cross inside the cloud	Neutral
5	Kumo Breakout from red cloud	Neutral
6	TK Bullish Cross below the cloud	Weak
7	Kijun Cross bullish below the cloud	Weak

PSEDYS Rule: Execute ONLY Strong or Neutral signals. Weak signals (below the cloud) are ignored or treated with 25% sizing.

---

8. Ideal Ichimoku Setup — All Elements Aligned

The ultimate bullish Ichimoku setup requires 5 simultaneous conditions (the "5 barrels" system):

```
1. PRICE above the Cloud (confirmed bullish breakout)
   Close > max(Span_A[i-26], Span_B[i-26])

2. GREEN CLOUD above the price (Span A > Span B, current bullish cloud)
   Span_A[i-26] > Span_B[i-26]

3. TENKAN above KIJUN (TK bullish)
   Tenkan[i] > Kijun[i]

4. CHIKOU above the price (Close[i] > Close[i-26])
   Confirmed bullish Chikou

5. FUTURE GREEN CLOUD (Span A calculated now > Span B)
   Span_A[i] > Span_B[i]   (cloud at bar i+26 is bullish)
```

Bullish setup scoring:

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Conditions Met	Setup Quality	PSEDYS Action
5/5	Exceptional	Entry with full sizing
4/5	Strong	Entry with 75–100% sizing
3/5	Moderate	Entry with 50% sizing, additional confirmation needed
< 3/5	Weak	Skip

Bearish setup = reversed conditions (price below red cloud, T < K, Chikou below price, future red cloud).

---

9. Kijun-sen as Major S/R Level

9.1 Why Kijun-sen is the Most Important Ichimoku Level

Kijun-sen = midpoint over 26 bars = price equilibrium over the last month. When the price moves far from Kijun, there is a tendency to revert (Ichimoku mean reversion):

```
Price distance from Kijun:
dist_pct = (close - kijun) / kijun * 100

> +3% above Kijun → price is overextended → possible pullback to Kijun
< -3% below Kijun → price is under-extended bearish → possible bounce to Kijun
```

9.2 Flat Kijun = Institutional Level

When Kijun is completely horizontal (slope ≈ 0), it means the Highs and Lows over 26 bars have NOT changed. This creates an exact price level where many Ichimoku algorithms have orders:

```
Flat Kijun at 50,000 USD: price oscillated in the same range all month
→ 50,000 = equilibrium level = strong magnet
→ Upon reaching after a period away: bounce (support) or rejection (resistance)
```

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9.3 Kijun Cross as Trend Signal

```
Bullish Kijun Cross (later and more reliable than TK Cross):
Close[i] crosses above Kijun[i] with closed candle
→ Price has recovered above the monthly equilibrium
→ Slower signal but with fewer false signals than TK Cross

Optimal confirmation:
Bullish Kijun Cross + Tenkan > Kijun + Green Cloud + ADX > 20
```

---

10. Ichimoku in Sideways Market

10.1 Behavior in Sideways

In a sideways market, Ichimoku degenerates as follows:
- **Tenkan = Kijun** or very close → frequent false TK Crossovers
- **Thin Cloud** → Span A ≈ Span B → multiple insignificant twists
- **Chikou** oscillates above/below the price from 26 bars ago without direction

10.2 Sideways Detection with Ichimoku

```
# Flat Kijun = sideways
kijun_slope = abs(kijun[i] - kijun[i-5]) / kijun[i] * 100
kijun_flat = kijun_slope < 0.05%  # Kijun hasn't moved more than 0.05% in 5 bars

# Thin Cloud = uncertain regime
cloud_thin = abs(span_a[i-26] - span_b[i-26]) / closes[i] * 100 < 0.3%

# Close TK = consolidation
tk_spread = abs(tenkan[i] - kijun[i]) / closes[i] * 100 < 0.2%

if kijun_flat and (cloud_thin or tk_spread):
    skip_ichimoku_signal = True
```

10.3 PSEDYS Rule for Sideways

```
Flat Kijun (slope < 0.05% over 5 bars) → TK Cross signals are unreliable
Cloud thickness < 0.3% of price → cloud does not provide significant S/R
```

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11. Alternative Parameters for Crypto

Standard parameters (9/26/52/26) were calibrated for markets with 6 days/week (historical Japanese market):

```
Standard Hosoda (6 days/week markets): 9, 26, 52, 26
Adapted for 5 days/week markets (modern): 9, 26, 52, 26 (remains standard)
```

For **crypto 24/7**, some traders adjust parameters:

Set	T	K	S	D	Warm-up	Characteristic
Standard	**9**	**26**	**52**	**26**	**78**	**PSEDYS default**
Crypto fast	7	22	44	22	66	Faster, more sensitive
Crypto slow	10	30	60	30	90	More stable, less noise
Weekly	9	26	52	26	78	Same on weekly TF

PSEDYS Recommendation: Use standard parameters 9/26/52/26 for consistency with TradingView and compatibility with Asian algorithms generating high volumes in crypto.

---

12. Multi-Timeframe Analysis (MTF)

12.1 MTF Ichimoku Hierarchy

Level	Timeframe	Components Used	Role
1 (Macro)	1D	Cloud position + color	Macro bull/bear regime
2 (Meso)	4H	Cloud + Kijun position	Medium trend and major S/R
3 (Micro)	1H	TK Cross + Cloud	Trend filter
4 (Entry)	15M/5M	TK Cross + Kijun	Entry timing

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12.2 MTF Ichimoku Scoring

1D Cloud	4H Cloud	1H TK	Scoring	Action
Green, price above □	Green, price above □	Bullish □	3/3	Entry Long with full sizing
Green, price above □	Green, price above □	Neutral ⚠	2/3	Entry with reduced sizing, wait for TK cross
Green, price above □	Price in cloud ⚠	any	1/3	Do not enter — 4H in consolidation
Green, price above □	Price below cloud □	any	conflict	Do not enter Long — 4H bearish
Red or price below □	any	TK Bullish	macro conflict	Do not enter Long

12.3 Ichimoku + ADX + EMA — Complete Combination

```
Complete Long setup with Ichimoku:
1. Price > Cloud 4H (green)          → macro Ichimoku ✓
2. Kijun 4H below price (bullish)    → 4H equilibrium ✓
3. TK Cross bullish on 1H            → momentum ✓
4. ADX 5M ≥ 18, +DI > -DI            → trend strength ✓
5. EMA 200 4H < price                → macro EMA ✓
6. Bullish Chikou (Close > Close_26_ago) → confirmation ✓
```

13. PSEDYS — Ichimoku in System Context

13.1 Ichimoku as Macro Filter (4H/1D)

Ichimoku on 4H can replace or complement the EMA 200 4H filter:

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```
-- No dedicated Ichimoku field in entry_features
-- but components can be calculated and injected as custom features:
-- tenkan_above_kijun, price_above_cloud, cloud_color, chikou_bullish

SELECT symbol, direction,
       entry_features->>'ema_stack'  AS ema_stack,
       entry_features->>'adx'        AS adx,
       entry_features->>'macd_cross' AS macd_cross
FROM live_positions
WHERE lower(state) != 'closed'
ORDER BY confidence DESC;
```

13.2 Cloud as S/R Level for SL Placement

Cloud bottom (in uptrend) = natural SL level for Long positions:

```
Entry Long at Kumo breakout:
→ Initial SL = Cloud Bottom (Span B if green cloud, or min(A,B))
→ When price far from cloud: SL remains at cloud bottom
→ Cloud moves progressively (based on 52 bars) → SL moves but slowly
```

13.3 Kijun-sen on 4H as Entry Filter

```
# Ichimoku filter for Long entry:
kijun_4h = compute_kijun(highs_4h, lows_4h, period=26)
price_above_kijun = close_4h[-1] > kijun_4h[-1]
# If False → price below 4H monthly equilibrium → skip Long
```

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14. Bot Validation vs TradingView

14.1 Main Sources of Divergence

Source	Probability	Impact
Incorrect cloud indexing (i-26 vs i)	Very High	Major — incorrect cloud
Highest/Lowest on High/Low vs Close	High	Different values
Incorrectly applied displacement	High	Incorrectly displaced clouds
Different parameters (T/K/S/D)	Medium	Shifted signals

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14.2 Most Common Error — Cloud Indexing

```
# WRONG — "current" cloud calculated at the current bar (not what the trader sees):
cloud_a = span_a[i]    # This is actually the FUTURE cloud on the chart

# CORRECT — "current" cloud at bar i = Span A/B calculated at bar i-26:
cloud_a = span_a[i - 26]   # This is the cloud visible BELOW the current price
cloud_b = span_b[i - 26]
```

If the bot compares the price with `span_a[i]` instead of `span_a[i-26]`, it will use the future cloud as a reference → completely incorrect breakout signals.

14.3 Validation Checklist

```
STEP 1 — Check formulas:
□ Tenkan = (max(High, 9 bars) + min(Low, 9 bars)) / 2  [NOT the average of closes!]
□ Kijun  = (max(High, 26 bars) + min(Low, 26 bars)) / 2
□ Span A = (Tenkan + Kijun) / 2
□ Span B = (max(High, 52 bars) + min(Low, 52 bars)) / 2

STEP 2 — Check displacement:
□ Current cloud at bar i: span_a[i-26] and span_b[i-26]
□ Future cloud at bar i: span_a[i] and span_b[i]
□ Chikou signal: closes[i] vs closes[i-26]
□ Chikou vs cloud: closes[i] vs cloud from bar i-26 (span_a[i-52], span_b[i-52])

STEP 3 — Check Highest/Lowest:
□ Calculated on High series (not Close!) for Tenkan/Kijun/Span B
□ Inclusive window: bar i and the last N-1 bars (including the current bar)

STEP 4 — Numeric test:
□ Compare Tenkan, Kijun, Cloud with TradingView on the same symbol/TF
□ Tolerance: < 0.01% difference for Tenkan/Kijun
□ Visible cloud = span_a/b from the correct bar (i-26)

STEP 5 — Check warm-up:
□ First 78 bars → incomplete cloud → no signal
□ From bar 79+ → complete signals available
```

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14.4 Python Validation Script

```
def ichimoku(highs, lows, closes, T=9, K=26, S=52, D=26):
    n = len(closes)

    def hh(i, period):
        return max(highs[max(0, i-period+1):i+1]) if i >= period-1 else None
    def ll(i, period):
        return min(lows[max(0, i-period+1):i+1]) if i >= period-1 else None

    tenkan, kijun, span_a, span_b = [], [], [], []
    for i in range(n):
        t = ((hh(i,T) + ll(i,T)) / 2) if hh(i,T) is not None else None
        k = ((hh(i,K) + ll(i,K)) / 2) if hh(i,K) is not None else None
        a = ((t + k) / 2) if (t and k) else None
        b = ((hh(i,S) + ll(i,S)) / 2) if hh(i,S) is not None else None
        tenkan.append(t); kijun.append(k); span_a.append(a); span_b.append(b)

    def cloud_current(i):
        idx = i - D
        if idx < 0 or span_a[idx] is None or span_b[idx] is None:
            return None, None
        return span_a[idx], span_b[idx]

    def chikou_bullish(i):
        return closes[i] > closes[i-D] if i >= D else None

    return tenkan, kijun, span_a, span_b, cloud_current, chikou_bullish

# Validation:
# cloud_a, cloud_b = cloud_current(i) → compare with TradingView cloud at bar i
# Difference < 0.01% = OK
```

15. Practical Exercises with Complete Answers

Exercise 1: TK Cross below the cloud — enter Long?

Situation: On 4H, Tenkan has just crossed above Kijun (TK Bullish Cross). Both are below the red cloud. The price is 5% below the cloud bottom. ADX 4H = 28, -DI > +DI.

Question: TK Bullish Cross on 4H — is it a valid Long signal?

Answer:

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NO — TK Cross below the red cloud = WEAK signal according to Ichimoku classification.

- **TK Cross below the red cloud** = the weakest type of bullish signal (jaku signal)
- Confirmed red cloud + price 5% below the cloud + -DI > +DI (ADX confirms bearish trend) → all elements confirm structural bearishness
- TK Bullish Cross in this context = temporary bounce in a downtrend
- **Correct action:** Skip Long. Wait for: (1) Bullish Kumo Breakout (Close > Cloud Top) + (2) Cloud turns green + (3) TK Cross above the cloud → strong signal. Or look for a Short setup at the retest of the Cloud Bottom as resistance.

Exercise 2: Partial ideal setup — 4/5 conditions

Situation: On 1H:
1. □ Price above the green cloud
2. □ Green cloud (Span A > Span B)
3. □ Tenkan > Kijun (TK bullish)
4. □ Future green cloud (Span A calculated > Span B)
5. □ Chikou: Close = 115.00, Close_26_ago = 116.50 (Chikou below price)

ADX = 24, EMA 200 4H below price.

Question: 4/5 conditions. Enter Long?

Answer:

Yes, with reduced sizing (75%) — 4/5 is a strong setup, negative Chikou is a warning but not a blocker if the rest confirms.

- **Negative Chikou** (Close < Close_26_ago): current price is slightly below the level from a month ago. Possible causes: short-term consolidation, or the current trend is weaker than the trend from the same period last month.
- But 4 out of 5 criteria strongly confirm bullish — the risk is manageable.
- **Correct action:**
- Enter Long with 75% normal sizing
- SL below Cloud Bottom (current Span B)
- TP1 at +2% → reduce to 50%
- If Close recovers above Close_26_ago (Chikou turns bullish) → add to position at full sizing

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Exercise 3: Kumo Twist on 4H — what do you anticipate?

Situation: On 4H, calculated Span A (at the current bar) has just crossed below Span B → BEARISH Kumo Twist detected. The current cloud is green. The price is 3% above the current green cloud. ADX 4H = 35.

Question: What does Kumo Twist signal? Exit existing Long?

Answer:

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Bearish Kumo Twist = ATTENTION signal, not immediate exit.

- **What it means:** The cloud WILL TURN RED in 26 bars (4H × 26 = ~104 hours = ~4.3 days). This is a predictive signal, not immediate.
- **Price is now 3% above the green cloud** → the current trend is bullish and active (ADX 35).
- **Correct action:**
  1. Do not exit Long immediately — the current trend is strong
  2. Monitor: in ~4–5 days the cloud will turn red → the support level will change
  3. When the cloud actually turns red (26 bars from today) → reevaluate
  4. Move SL higher progressively — you don't want to be in Long when the cloud turns bearish and the price tests the cloud from below
  5. With ADX eventually decreasing + TK Bearish Cross → exit Long

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Exercise 4: Kijun as a magnet — entry on pullback

Situation: BTC has risen by 12% in 5 days on 4H. The price is 4.5% above the 4H Kijun-sen. Kijun has a clear positive slope. Green cloud 7% below the price. Tenkan > Kijun. Chikou bullish.

Question: Enter Long now or wait?

Answer:

Wait for pullback to Kijun — the 4.5% distance from Kijun is significant.

- **Kijun as a magnet rule:** Price 4.5% above Kijun = overextended from the monthly equilibrium. Historically, in healthy trends, the price returns to Kijun before continuing.
- **Entry now = entry at maximum distance from Kijun** → SL tighter than it should be or SL at cloud (-7%) = unfavorable risk/reward.
- **Correct action:**
  1. Do not enter now
  2. Set alert at Kijun-sen ± 0.3%
  3. On pullback to Kijun with confirmed bounce (closed candle returning above Kijun) → enter Long
  4. SL below Kijun (−0.5%)
  5. TP at previous level (12% up) or at extension
  6. If the price does not pull back and continues → accept that you missed the setup; do not chase the price

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16. Cheat Sheet — Rapid Summary

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Concept	Value / Rule
Tenkan	`(max(H,9) + min(L,9)) / 2` — short momentum
Kijun	`(max(H,26) + min(L,26)) / 2` — monthly equilibrium
Span A	`(Tenkan + Kijun) / 2` → plotted +26 bars
Span B	`(max(H,52) + min(L,52)) / 2` → plotted +26 bars
Chikou	`Close[i]` → plotted at bar i−26
Current Cloud	`Span_A[i-26]` and `Span_B[i-26]`
Future Cloud	`Span_A[i]` and `Span_B[i]`
Chikou bullish	`Close[i] > Close[i-26]`
Minimum Warm-up	78 bars (52+26)
Production	100+ bars
Lag Tenkan	4.0 bars
Lag Kijun	12.5 bars
Lag Span A	~34 bars (calculation + displacement)
Lag Span B	~51 bars (calculation + displacement)
Green Cloud	Span A > Span B → structural bullish
Red Cloud	Span B > Span A → structural bearish
Thick Cloud	|Span A − Span B| / price > 2% → strong S/R
Thin Cloud	< 0.3% → weak S/R, easy breakout
TK Bull Cross above green cloud	STRONG signal (kin signal)
TK Bull Cross in cloud	NEUTRAL signal
TK Bull Cross below cloud	WEAK signal — skip
Bullish Kumo Breakout	Close > Cloud Top closed candle → confirmed bullish trend
Bullish Kijun Cross	Close > Kijun, slower, more reliable than TK
Bullish Kumo Twist	Span A > Span B in future area → green cloud in 26 bars
Flat Kijun	Slope < 0.05% → consolidation + major S/R level
Price-Kijun Distance	> 3% → overextended → wait for pullback to Kijun for entry
Ideal Setup 5/5	

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Concept	Value / Rule
	Price > Green Cloud + T > K + Chikou bull + Future Green Cloud
Setup 4/5	Entry with 75% sizing
Setup 3/5	Entry with 50% sizing + additional confirmation
Setup < 3/5	Skip
Sideways Filter	Flat Kijun + thin cloud + T≈K → skip Ichimoku signals
Error #1 bot	`span_a[i]` instead of `span_a[i-26]` for current cloud
Standard Parameters	T=9, K=26, S=52, D=26
Crypto Fast Parameters	T=7, K=22, S=44, D=22
Macro TF	1D cloud = macro bull/bear separator for crypto
MTF Score 3/3	1D green cloud + 4H green cloud + 1H TK bullish → full sizing

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PSEDYS Ichimoku Technical Manual v1.0 — May 2026
Covers: all 5 components with complete formulas, temporal paradox (past/present/future simultaneously), lag per component, 78-bar warm-up, verified numeric example 100 bars (cloud at bar 78, TK cross at bars 40 and 53, Chikou confirmed), Kumo (cloud) color/thickness/twist, signal classification (strong/neutral/weak), ideal setup 5/5, Kijun as magnet and major S/R level, Ichimoku sideways detection, alternative crypto parameters, MTF 3 levels, PSEDYS integration, bot vs TradingView validation (cloud indexing error), complete Python script, 4 practical exercises.

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