Backtesting Database Schema Documentation v2

# Database Overview

 **Database Type**: SQLite

 **Total Tables**: 13

 **Total Records**: ~23 million

 **Database Size**: ~2.4 GB

# Strategy Schema DiagramA screenshot of a computer AI-generated content may be incorrect.

# 

# Strategy & Backtesting Table Structure

## STRATEGY - Strategy Definitions

**Purpose**: High-level strategy metadata with multi-symbol support

|  |  |  |  |
| --- | --- | --- | --- |
| **Column** | **Type** | **Constraints** | **Description** |
| strategy\_id | INTEGER | PRIMARY KEY | Unique identifier |
| name | VARCHAR(100) | NOT NULL | Strategy name |
| version | VARCHAR(20) | DEFAULT 'v1.0' | Version number |
| strategy\_type | VARCHAR(50) |  | mean\_reversion/trend\_following/macro |
| strategy\_level | VARCHAR(20) | DEFAULT 'main' | main/sub/version |
| parent\_strategy\_id | INTEGER |  | Links to parent strategy |
| primary\_symbol | VARCHAR(10) |  | Main trading symbol |
| secondary\_symbols | TEXT |  | JSON array of additional symbols |
| use\_highest\_frequency | BOOLEAN | DEFAULT 1 | Auto-detect best timeframe |
| fallback\_timeframe | VARCHAR(10) | DEFAULT '1min' | Default timeframe |
| created\_date | DATETIME | DEFAULT CURRENT | Creation timestamp |
| modified\_date | DATETIME | DEFAULT CURRENT | Last modification |
| is\_active | BOOLEAN | DEFAULT 1 | Enable/disable strategy |
| description | TEXT |  | Strategy description |

## STRATEGY\_RULES - Strategy Logic Components

**Purpose**: Individual entry/exit/filter rules for strategies

|  |  |  |  |
| --- | --- | --- | --- |
| **Column** | **Type** | **Constraints** | **Description** |
| rule\_id | INTEGER | PRIMARY KEY | Unique identifier |
| strategy\_id | INTEGER | NOT NULL, FK | References strategy |
| rule\_type | VARCHAR(50) | NOT NULL | filter/entry/exit |
| rule\_name | VARCHAR(100) |  | Descriptive name |
| rule\_logic | TEXT |  | Human-readable description |
| rule\_expression | TEXT |  | Machine-readable expression |
| priority | INTEGER | DEFAULT 1 | Execution order |
| is\_active | BOOLEAN | DEFAULT 1 | Enable/disable rule |
| C |  |  | C |

## STRATEGY\_PARAMETERS - Configurable Parameters

**Purpose**: Adjustable parameters separate from logic

|  |  |  |  |
| --- | --- | --- | --- |
| **Column** | **Type** | **Constraints** | **Description** |
| param\_id | INTEGER | PRIMARY KEY | Unique identifier |
| strategy\_id | INTEGER | NOT NULL, FK | References strategy |
| param\_name | VARCHAR(100) | NOT NULL | Parameter name |
| param\_value | TEXT |  | Current value |
| param\_type | VARCHAR(50) | DEFAULT 'numeric' | numeric/boolean/string |
| min\_value | REAL |  | Minimum for optimization |
| max\_value | REAL |  | Maximum for optimization |
| description | TEXT |  | Parameter description |
| C |  |  | C |

**Current Data**: 4 parameters (position\_size, stop\_loss\_percent, trailing\_stop\_percent, profit\_target\_percent)

## CALCULATION\_METHODS - Indicator Definitions

**Purpose**: Reusable calculation methods for technical indicators

|  |  |  |  |
| --- | --- | --- | --- |
| **Column** | **Type** | **Constraints** | **Description** |
| method\_id | INTEGER | PRIMARY KEY | Unique identifier |
| method\_name | VARCHAR(50) | NOT NULL | Method name (SMA, EMA, RSI) |
| method\_category | VARCHAR(50) |  | Category (moving\_average, momentum) |
| input\_type | VARCHAR(50) |  | Required input type |
| required\_params | TEXT |  | JSON array of required parameters |
| optional\_params | TEXT |  | JSON array of optional parameters |
| min\_lookback | INTEGER | DEFAULT 0 | Minimum bars needed |
| description | TEXT |  | Method description |
| formula | TEXT |  | Mathematical formula |
| C |  |  | C |

**Current Data**: 7 methods (SMA, EMA, RSI, DECLINE\_FROM\_PEAK, SPIKE, CROSSES\_ABOVE, CROSSES\_BELOW)

## BACKTEST - Backtest Execution Records

**Purpose**: Track each backtest run

|  |  |  |  |
| --- | --- | --- | --- |
| **Column** | **Type** | **Constraints** | **Description** |
| backtest\_id | INTEGER | PRIMARY KEY | Unique identifier |
| strategy\_id | INTEGER | NOT NULL, FK | References strategy |
| start\_date | DATE | NOT NULL | Backtest start date |
| end\_date | DATE | NOT NULL | Backtest end date |
| run\_timestamp | DATETIME | DEFAULT CURRENT | When backtest was run |
| config | TEXT |  | JSON configuration used |
| data\_frequency\_used | VARCHAR(10) |  | Actual timeframe used |
| C |  |  | C |

**TRADE – Individual Trade Records**

**Purpose**: Store every trade with complete details

|  |  |  |  |
| --- | --- | --- | --- |
| **Column** | **Type** | **Constraints** | **Description** |
| trade\_id | INTEGER | PRIMARY KEY | Unique identifier |
| backtest\_id | INTEGER | NOT NULL, FK | References backtest |
| symbol\_id | INTEGER | NOT NULL, FK | References symbol |
| entry\_datetime | DATETIME | NOT NULL | Trade entry time |
| exit\_datetime | DATETIME |  | Trade exit time |
| entry\_price | REAL | NOT NULL | Entry price |
| exit\_price | REAL |  | Exit price |
| position\_size | INTEGER | DEFAULT 1 | Number of contracts |
| pnl | REAL |  | Profit/loss in dollars |
| pnl\_percent | REAL |  | Profit/loss percentage |
| entry\_conditions | TEXT |  | JSON of conditions at entry |
| exit\_reason | TEXT |  | Why trade was closed |

## BACKTEST\_METRICS - Performance Summary

**Purpose**: Pre-calculated metrics for each backtest

|  |  |  |  |
| --- | --- | --- | --- |
| **Column** | **Type** | **Constraints** | **Description** |
| backtest\_id | INTEGER | PRIMARY KEY, FK | References backtest |
| total\_trades | INTEGER |  | Number of trades |
| winning\_trades | INTEGER |  | Number of winners |
| losing\_trades | INTEGER |  | Number of losers |
| win\_rate | REAL |  | Win percentage |
| profit\_factor | REAL |  | Gross profit / gross loss |
| sharpe\_ratio | REAL |  | Risk-adjusted return |
| sortino\_ratio | REAL |  | Downside risk-adjusted return |
| max\_drawdown | REAL |  | Maximum peak-to-trough decline |
| total\_return | REAL |  | Total return percentage |
| total\_pnl | REAL |  | Total profit/loss |
| avg\_pnl | REAL |  | Average trade P&L |
| expectancy | REAL |  | Expectancy of trades |
| avg\_loss | REAL |  | Average losing trade |
| avg\_duration\_hours | REAL |  | Average trade duration |
| final\_capital | REAL |  | Ending capital |
| commissions\_paid | REAL |  | Total commissions |

# Key Design Features

1. **Multi-Symbol Support**: Strategies can trade multiple symbols with different timeframes
2. **Flexible Rule System**: Rules stored as expressions that can be parsed
3. **Parameter Optimization**: Min/max values enable systematic testing
4. **Comprehensive Metrics**: Detailed performance tracking
5. **Version Control**: Multiple versions of strategies can coexist
6. **Enable/Disable Logic**: Rules and strategies can be toggled without deletion