

Range Brain AI 2.0

Complete User Manual
Advanced Neural Network-Powered Range Breakout Trading System

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Introduction

Range Brain AI 2.0 is a sophisticated Expert Advisor that combines traditional range breakout strategies with cutting-edge neural network technology. Unlike conventional breakout systems, this EA employs a custom-built neural network that analyzes RSI patterns and moving average relationships to filter signals, dramatically improving trade quality and reducing false breakouts.

Key Features

- Intelligent Range Detection:** Precision time-based range identification with customizable periods
- Neural Network Signal Filtering:** Advanced RSI pattern analysis with adaptive learning
- Professional Risk Management:** Break-even protection, partial closes, and trailing stops
- Visual Range Display:** Real-time range visualization with optional pulsing animations
- One-Trade-Per-Direction Logic:** Prevents overtrading with maximum one high and one low breakout per day

How It Works

- Range Establishment:** The EA identifies price ranges during specified time periods
- Neural Network Analysis:** Analyzes RSI patterns and moving average relationships
- Breakout Detection:** Monitors for price breaks above/below established ranges
- Signal Validation:** Neural network confirms or rejects breakout signals
- Trade Execution:** Opens positions with comprehensive risk management
- Position Management:** Applies break-even, partial closes, and trailing stops

System Requirements

Platform Requirements

- MetaTrader 5 platform (build 3560 or higher)
- Windows 10/11 or Windows Server 2016+
- Minimum 4GB RAM (8GB recommended)
- Stable internet connection

Broker Requirements

- ECN or STP broker (recommended for best spreads)
- Minimum stop level ≤ 50 points
- Allow algorithmic trading enabled
- Hedging or netting account mode supported

Recommended Instruments

- Primary:** GBP/JPY - optimal volatility and range behavior
- Secondary:** Major forex pairs (EURUSD, GBPUSD, USDJPY)
- Alternative:** High-volatility indices (US30, NAS100, Gold)

Optimal Timeframes

- M5:** Best for frequent opportunities and quick ranges
- M15:** Balanced approach with good signal quality
- M30:** Conservative approach with fewer but higher-quality signals

Installation Guide

Step 1: File Installation

- The Range Brain AI 2.0.exe will save to your terminal upon purchase
- The EA will appear in the Navigator under Market

Step 2: Chart Setup

- Open your desired trading instrument chart
- Set the appropriate timeframe (M5, M15, or M30 recommended)
- Drag the Range Brain AI 2.0 EA onto the chart
- Configure parameters in the input dialog

Step 3: Initial Configuration

- Set your risk percentage (recommended: 0.5-2%)
- Configure range detection times for your trading session
- Enable live trading and auto-trading in MetaTrader 5
- Monitor the EA's first few operations to ensure proper function

Parameter Configuration

General Settings

Unique Identifier for EA (InpMagic)
Default: 012345
Purpose: Distinguishes this EA's trades from others
Recommendation: Change if running multiple EAs on the same account
Range: Any positive integer

Comment for Trades (InpTradeComment)
Default: "Range Brain AI"
Purpose: Adds identifying comment to all trades
Recommendation: Keep default or customize for tracking
Note: Useful for trade analysis and record keeping

Cooldown Minutes Between Trades (tradeCooldownMinutes)
Default: 30 minutes
Purpose: Prevents rapid-fire trading after position closure
Recommendation: 15-60 minutes depending on volatility
Higher Values: More conservative, fewer trades
Lower Values: More aggressive, more frequent trading

Enable Debug Messages (EnableDebugPrints)
Default: false
Purpose: Shows detailed logging information
Recommendation: Enable during initial setup and optimization
Note: May slow performance if left enabled in live trading

Range Definition

Range Start Hour/Minute
Default: 4:45 (London pre-market)
Purpose: When the EA begins tracking price ranges
Common Settings:

- London Session:** 4:45-6:30 (tight ranges before volatility)
- New York Session:** 13:30-15:00 (afternoon consolidation)
- Asian Session:** 22:00-00:30 (quieter market periods)

Range End Hour/Minute
Default: 6:30
Purpose: When range tracking stops and breakout monitoring begins
Recommendation: Allow 1-3 hours for proper range establishment
Note: Longer ranges may be more reliable but provide fewer opportunities

Money Management

Position Sizing Method
Use Fixed Lot Size (useFixedLot)

- Default:** false
- Purpose:** Choose between fixed lots or risk-based sizing
- Recommendation:** Use risk-based for better capital management

Risk Percentage (riskPercent)

- Default:** 1.00%
- Purpose:** Percentage of account balance to risk per trade
- Conservative:** 0.5-1%
- Moderate:** 1-2%
- Aggressive:** 2-3%

Neural Network Explained

The neural network is the core intelligence of Range Brain AI 2.0. It analyzes RSI patterns to determine the quality of breakout signals, significantly reducing false breakouts.

Core Neural Network Parameters

Number of Nodes (NumNodes)
Default: 10
Purpose: How many past RSI values the network analyzes
Range: 5-20
Recommendations:

- Short-term patterns:** 5-8 nodes
- Balanced analysis:** 8-12 nodes
- Long-term patterns:** 12-20 nodes

Impact: More nodes = more data but slower adaptation

Buy Target Output (BuyTargetOutput)
Default: 0.2
Purpose: Neural network training target for buy signals
Range: 0.1 to 0.5
Function: When RSI ≥ 50, network learns to output this value
Higher Values: Stronger buy signal requirements
Lower Values: More sensitive buy signal detection

Sell Target Output (SellTargetOutput)
Default: -0.17
Purpose: Neural network training target for sell signals
Range: -0.5 to -0.1
Function: When RSI < 50, network learns to output this value
More Negative Values: Stronger sell signal requirements
Less Negative Values: More sensitive sell signal detection
Note: Different from buy target allows for market asymmetry adaptation

Learning Rate (LearningRate)
Default: 0.71
Purpose: How quickly the network adapts to new data
Range: 0.1 to 1.0
Recommendations:

- Stable markets:** 0.3-0.5 (slower learning)
- Volatile markets:** 0.6-0.8 (faster adaptation)
- Experimental:** 0.8-1.0 (rapid learning)

Trade-off: Higher rates adapt faster but may overfit

Minimum Signal Threshold (MinSignalThreshold)
Default: 0.16
Purpose: Minimum neural network output strength to generate trades
Range: 0.05 to 0.3
Impact:

- Lower Values:** More trades, potentially lower quality
- Higher Values:** Fewer trades, higher quality signals

Optimization: Adjust based on win rate vs frequency needs

How the Neural Network Works

- Data Collection:** Gathers the last NumNodes RSI values
- Normalization:** Converts RSI values to neural network input range (-1 to +1)
- Processing:** Applies weights and activation functions to generate output
- MA Enhancement:** Modifies output based on moving average trends
- Signal Generation:** Compares output to MinSignalThreshold
- Learning:** Updates weights based on RSI conditions (≥50 = buy target, <50 = sell target)

Risk Management Guide

Position Sizing Strategy

Risk-Based Sizing (Recommended)

- Set useFixedLot = false
- Configure riskPercent (0.5-2% recommended)
- EA automatically calculates lot size based on stop loss distance
- Maintains consistent dollar risk per trade

Trade Management Sequence

The EA applies risk management features in this order:

- Position Opening:** Risk-calculated position size
- Break-Even Move:** Protects against loss when profit reached
- Partial Close:** Takes partial profits at predetermined level
- Trailing Stop:** Follows price to maximize profits
- Take Profit:** Final exit at target level

Visual Interface Guide

Range Visualization

Horizontal Lines Color (colorHorizontalLines)
Default: White Smoke
Purpose: Color of range high/low boundary lines
Recommendation: Use contrasting colors to chart background

Enable Pulsing Range (enablePulsingRange)
Default: true
Purpose: Animates range lines with color changes
Benefit: Draws attention to active ranges
Note: Disable if causing chart performance issues

Trading Strategy Overview

Range-Based Trading Concept

Range Brain AI 2.0 operates on the principle that markets often establish trading ranges during low-volatility periods, followed by directional breakouts during increased activity.

Strategy Components

- Range Identification:** Monitors price action during specified hours
- Breakout Detection:** Identifies when price breaks above/below range
- Signal Validation:** Neural network confirms breakout quality
- Trade Execution:** Opens position in breakout direction
- Risk Management:** Applies comprehensive position management

Optimization Guidelines

Strategy Tester Configuration

Testing Setup

- Period:** Use at least 1-2 years of data, 5+ years recommended depending on the timeframe you are analyzing
- Model:** Every tick based on real ticks (most accurate)
- Optimization:** Genetic algorithm with 1000+ passes
- Balance:** Start with \$10,000-\$50,000 for realistic testing

Key Metrics to Monitor

- Profit Factor:** Target > 1.3
- Win Rate:** Aim for 45-65%
- Maximum Drawdown:** Keep < 20% of balance
- Recovery Factor:** Profit / Max Drawdown > 3.0
- Sharpe Ratio:** Higher values indicate better risk-adjusted returns

Parameter Optimization Sequence

Phase 1: Basic Setup

- Optimize rangeStartHour/Minute and rangeEndHour/Minute
- Test riskPercent values (0.5%, 1%, 1.5%, 2%)
- Adjust stopLossPoints and takeProfitPoints

Phase 2: Neural Network Tuning

- Optimize RSIPeriod (14, 21, 25, 30)
- Test NumNodes values (5, 8, 10, 12, 15)
- Adjust MinSignalThreshold (0.1, 0.15, 0.2, 0.25)
- Fine-tune LearningRate (0.5, 0.6, 0.7, 0.8)

Troubleshooting

Common Issues and Solutions

No Trades Being Executed
Possible Causes:

- Range not properly established
- Neural network threshold too high
- Insufficient margin
- Market closed or low volatility

Solutions:

- Check range formation during specified hours
- Lower MinSignalThreshold temporarily
- Verify account margin and EA permissions
- Enable debug prints to monitor signal generation

Poor Performance
Possible Causes:

- Inappropriate range times for instrument
- Neural network not adapted to current conditions
- Risk management too conservative/aggressive

Solutions:

- Optimize range times for your trading session
- Adjust learning rate for faster adaptation
- Review and optimize risk management parameters

Debug Mode Operation

Enable EnableDebugPrints = true to see detailed information:

- Range establishment progress
- Neural network output values
- Signal generation decisions
- Trade execution details
- Risk management actions

Best Practices

Setup and Configuration

- Start with Demo:** Always test thoroughly on demo account first
- Use Default Settings:** Begin with default parameters before optimizing
- Monitor Closely:** Watch first few days of operation carefully
- Document Changes:** Keep record of parameter modifications and results

Risk Management

- Conservative Start:** Begin with 0.5-1% risk per trade
- Gradual Scaling:** Increase risk only after consistent profitability
- Diversification:** Don't risk more than 10% of portfolio on single EA
- Stop Loss Discipline:** Never override EA's risk management decisions

Long-term Success

- Patience:** Allow neural network time to adapt and learn
- Consistency:** Avoid frequent parameter changes
- Realistic Expectations:** Expect 10-30% annual returns, not overnight riches
- Continuous Learning:** Stay updated with market conditions and EA performance

Advanced Configuration Examples

```
Conservative Setup (Low Risk) riskPercent = 0.5% MinSignalThreshold = 0.25
usePartialClose = true PartialTriggerPoints = 400 StopMoveToBE = true
BreakEvenTriggerPoints = 300
```

```
Balanced Setup (Moderate Risk) riskPercent = 1.0% MinSignalThreshold = 0.18
usePartialClose = true PartialTriggerPoints = 600 useTrailingStop = true
TrailingStart = 1800
```

```
Aggressive Setup (Higher Risk) riskPercent = 2.0% MinSignalThreshold = 0.10
LearningRate = 0.8 useTrailingStop = true TrailingStart = 800 TrailingStep = 50
```