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

1. **Range Establishment**: The EA identifies price ranges during specified time periods
2. **Neural Network Analysis**: Analyzes RSI patterns and moving average relationships
3. **Breakout Detection**: Monitors for price breaks above/below established ranges
4. **Signal Validation**: Neural network confirms or rejects breakout signals
5. **Trade Execution**: Opens positions with comprehensive risk management
6. **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

1. The Range Brain AI 2.0.ex5 will save to your terminal upon purchase
2. The EA will appear in the Navigator under Market

Step 2: Chart Setup

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

Step 3: Initial Configuration

1. Set your risk percentage (recommended: 0.5-2%)
2. Configure range detection times for your trading session
3. Enable live trading and auto-trading in MetaTrader 5
4. 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

1. **Data Collection**: Gathers the last NumNodes RSI values

2. **Normalization**: Converts RSI values to neural network input range (-1 to +1)

3. **Processing**: Applies weights and activation functions to generate output

4. **MA Enhancement**: Modifies output based on moving average trends

5. **Signal Generation**: Compares output to MinSignalThreshold

6. **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:

1. **Position Opening**: Risk-calculated position size

2. **Break-Even Move**: Protects against loss when profit reached

3. **Partial Close**: Takes partial profits at predetermined level

4. **Trailing Stop**: Follows price to maximize profits

5. **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

1. **Range Identification**: Monitors price action during specified hours
2. **Breakout Detection**: Identifies when price breaks above/below range
3. **Signal Validation**: Neural network confirms breakout quality

4. **Trade Execution**: Opens position in breakout direction

5. **Risk Management**: Applies comprehensive position management

Session-Specific Considerations

Session	Time (GMT)	Characteristics	Recommended Range
London	4:00-8:00	Tight ranges before market open, good breakout potential	4:45-6:30
New York	13:00-17:00	Afternoon consolidation, strong breakouts during NY open	13:30-15:00
Asian	22:00-2:00	Lower volatility, tighter ranges, smaller moves	22:00-00:30

Optimization Guidelines

Strategy Tester Configuration

Testing Setup

- **Period**: Use at least 1-2 years of data, 5+ years reccommended 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

1. Optimize rangeStartHour/Minute and rangeEndHour/Minute

2. Test riskPercent values (0.5%, 1%, 1.5%, 2%)

3. Adjust stopLossPoints and takeProfitPoints

Phase 2: Neural Network Tuning

1. Optimize RSIPeriod (14, 21, 25, 30)

2. Test NumNodes values (5, 8, 10, 12, 15)

3. Adjust MinSignalThreshold (0.1, 0.15, 0.2, 0.25)

4. 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:

1. Check range formation during specified hours
2. Lower MinSignalThreshold temporarily
3. Verify account margin and EA permissions
4. 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:**
>
> 1. Optimize range times for your trading session
> 2. Adjust learning rate for faster adaptation
> 3. 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

1. **Start with Demo**: Always test thoroughly on demo account first
2. **Use Default Settings**: Begin with default parameters before optimizing

3. **Monitor Closely**: Watch first few days of operation carefully

4. **Document Changes**: Keep record of parameter modifications and results

Risk Management

1. **Conservative Start**: Begin with 0.5-1% risk per trade

2. **Gradual Scaling**: Increase risk only after consistent profitability

3. **Diversification**: Don't risk more than 10% of portfolio on single EA

4. **Stop Loss Discipline**: Never override EA's risk management decisions

Long-term Success

1. **Patience**: Allow neural network time to adapt and learn

2. **Consistency**: Avoid frequent parameter changes

3. **Realistic Expectations**: Expect 10-30% annual returns, not overnight riches

4. **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 = 0.16 UsePartialClose = true
PartialTriggerPoints = 600 UseTrailingStop = true
TrailingStart = 1000
```

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

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This manual provides comprehensive guidance for Range Brain AI 2.0.
Always conduct thorough testing and start with small risk amounts when
beginning live trading.