Performance and ratios of the Zen Trading System v1.7e

Version 1.7

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Exemption from Liability

The software product **Zen Trading System** generates trading signals concerning the trading of the german DAX Index instruments based on the implemented mechanical trading system and on price data input of the user. Results obtained in the past offer however no security for the future success of the system. Therefore no guarantee for a successful trading in the future can be taken using this software product. The user is fully responsible for his trading actions and his trading risk.

Introduction

The **Zen Trading System v1.7e** is a professional software product for the generation of trading signals concerning the german Xetra Dax Index on the basis of available price data („end of day“). Beyond that the software has a “system tester”, which allows tests of different price data rows concerning the implemented trading system.

This expertise contains system test („back test“) results for daily Xetra Dax Index price data from 01/01/2000 to 12/31/2008.

These tests were accomplished without stops, with stops as well as with pyramiding. You should naturally consider using stop loss and trailing stop in the real trading is always dependent to the possibilities of the used trading platform and services!

Beyond that further tests for the system using Monte Carlo Simulation methods are documented. These tests concerning the chances, risks and validation of trading systems and concepts were accomplished with the software product **Zen Monte Carlo Simulator v5.1e.**

1. Basic conditions for the system tests

The following basic conditions are valid for all system tests:

- Use of daily OHLC price data (“end of day“, EOD) of the german Xetra Dax Index.
- The evaluation period is fixed from 01/01/2000 to 12/31/2008. Since the system needs 100 data records as advance to produce the first trading signal, the test data file contains data starting from in the middle of 1999.
- The transactions and position changes always take place at the tradable close price. This makes possible real trading in practice for the most instruments and ensures a real performance calculation!
- Transaction costs (Slippage, spreads and fees) will be calculated with 1 Dax point for each roundturn (open position, close position) for the test without stop. The tests with stop are calculated with 3 Dax points roundturn, because of fees for the guaranted stop loss.
- The position size are 10 CFD contracts (1 Dax point = €10).
- The initial trading capital of the account is €20,000.

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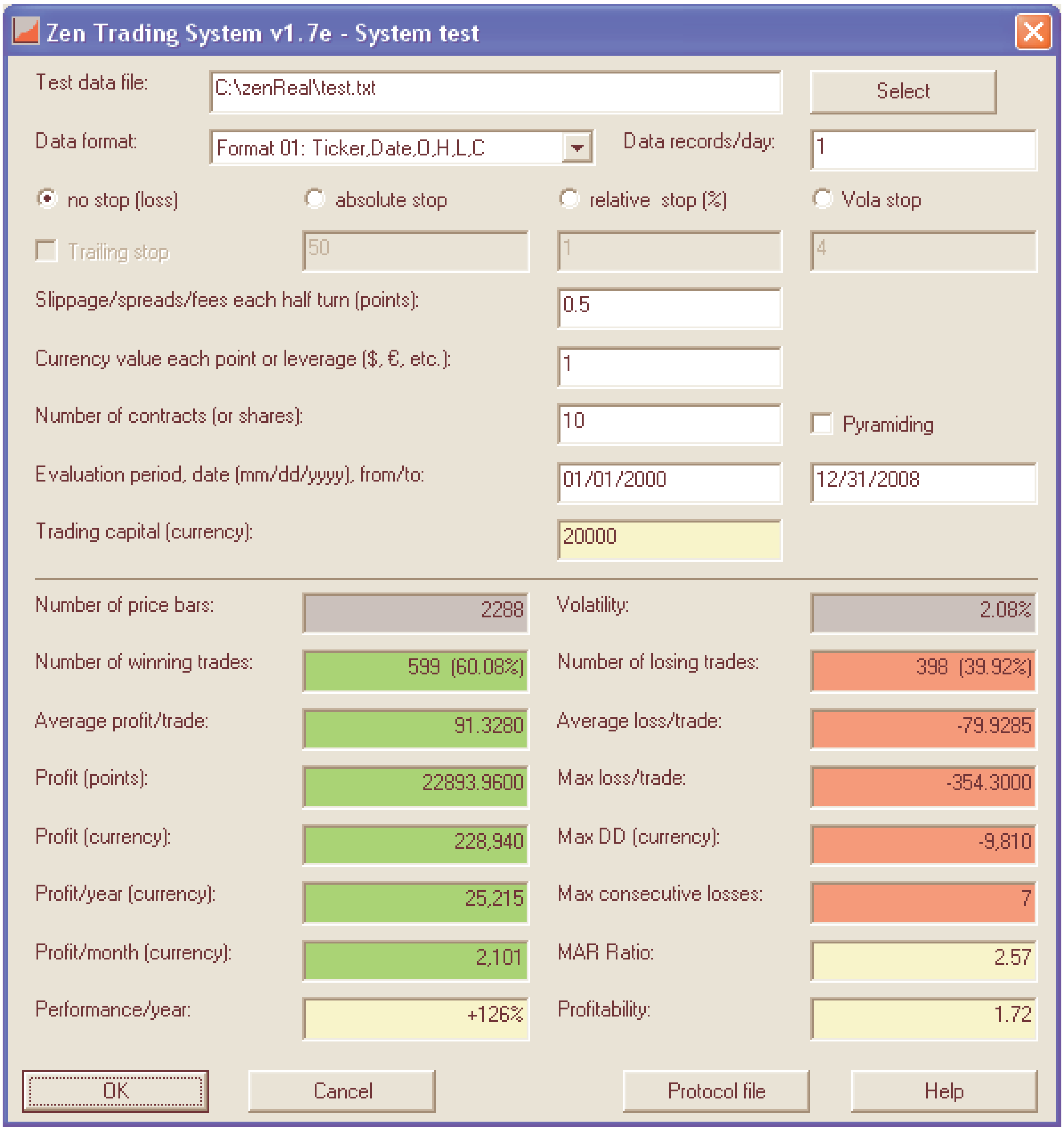
2. System test without stops

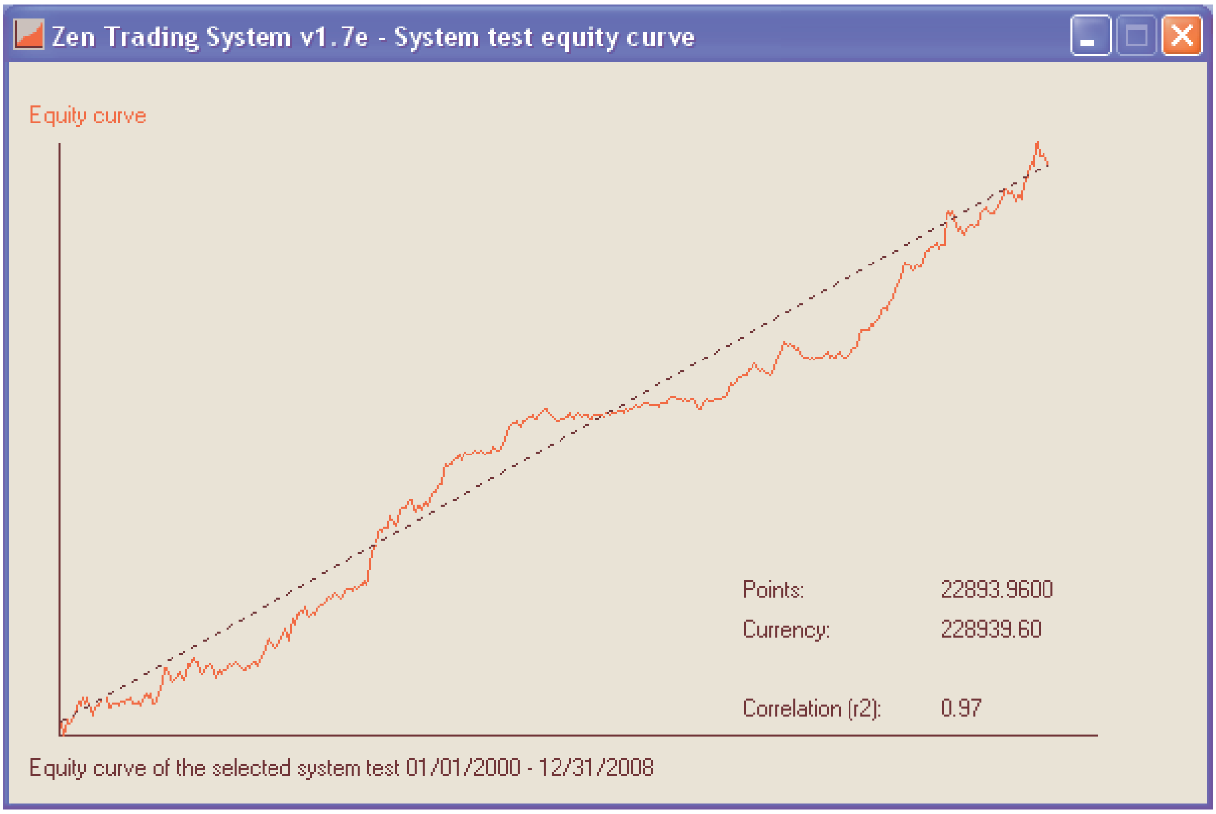
The first system test uses only the Long or Short signals of the system and trades without stop loss, trailing stop or pyramiding of the contract positions.

Risk management: not activated

Money management: position size of 10 CFD contracts



The equity curve of this system test:



Results:

- The system test results from 01/01/2000 to 12/31/2008 are **22,893 Dax points.**

- This corresponds to a total profit of €228,939 or an annual profit of €25,215 using the selected position size of 10 CFDs (contracts of difference).

- 60.08% of the trades were profitable

- Max. drawdown is (-€9,810).

- The **annual performance** concerning the initial trading capital of von €20,000 is **126%.**

- The profitability index or profit factor is 1.72

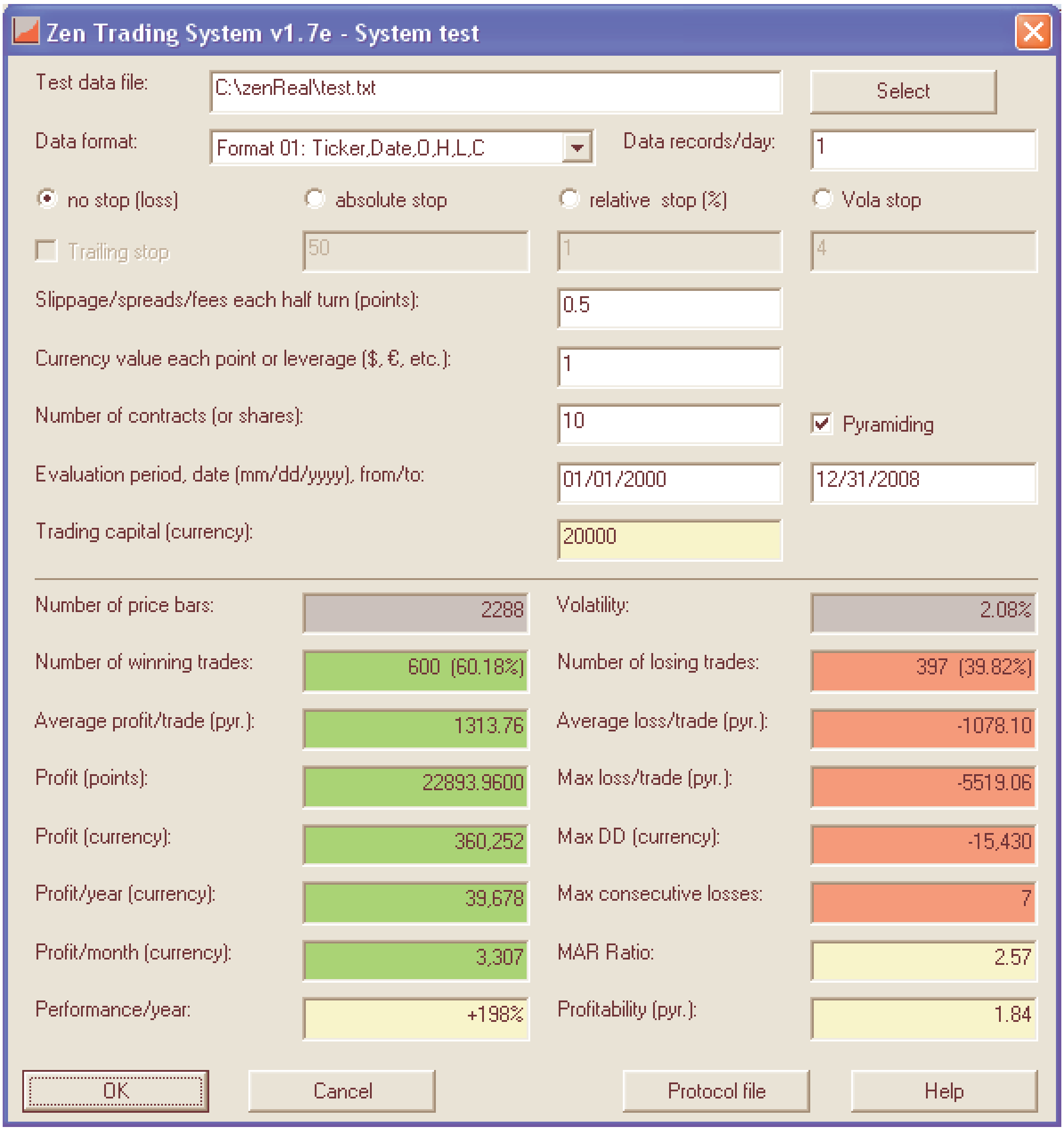
- MAR Ratio is 2.57

3. System test without stops, but with pyramiding

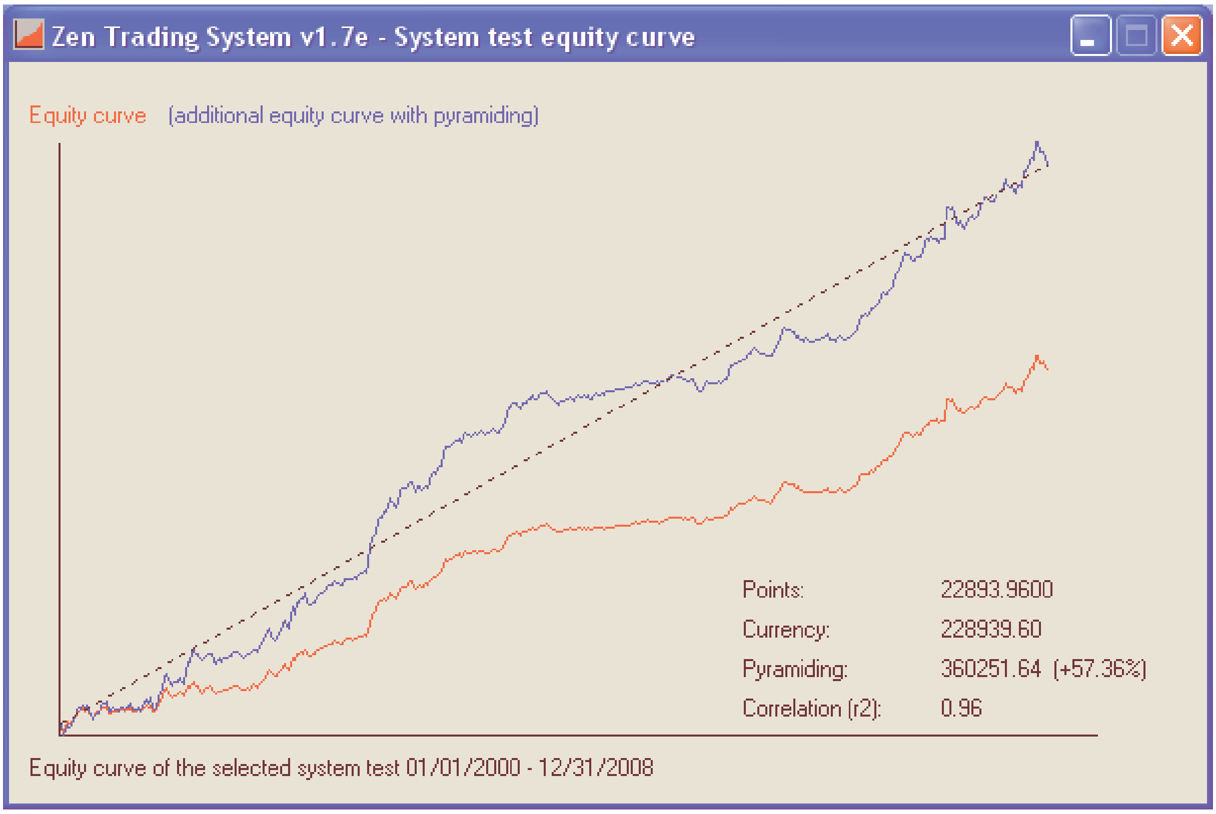
The second system test uses additionally a simple pyramiding model.

Risk management: not activated

Money management: 10 CFD contracts as initial position size, pyramiding in two Steps (first + 60%, then + 40% always at the next close price and based on the initial position size, so the max. position size here are 20 CFD contracts)



The equity curve of this system test:



Results:

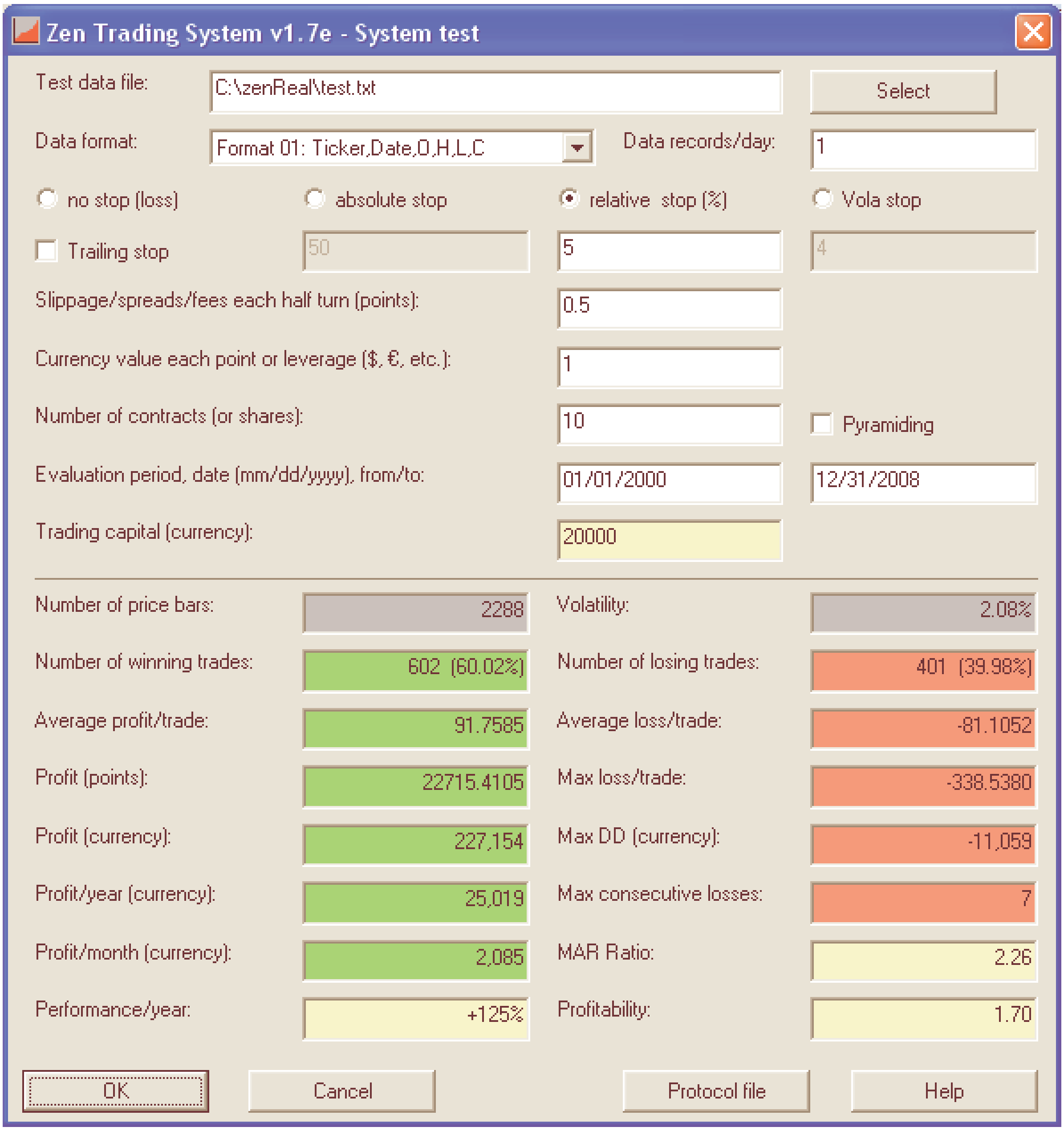
- The system test results from 01/01/2000 to 12/31/2008 are **22,893 Dax points.**
- This corresponds to a total profit of €360,251 or an annual profit of €39,678 using the selected initial position size of 10 CFDs and using a pyramiding model.
- 60.18% of the trades were profitable
- Max. drawdown is (-€15,430),
- The **annual performance** concerning the initial trading capital of von €20,000 is **198%.**
- The profitability index or profit factor is 1.84
- MAR Ratio is 2.57

4. System test with “disaster stops”

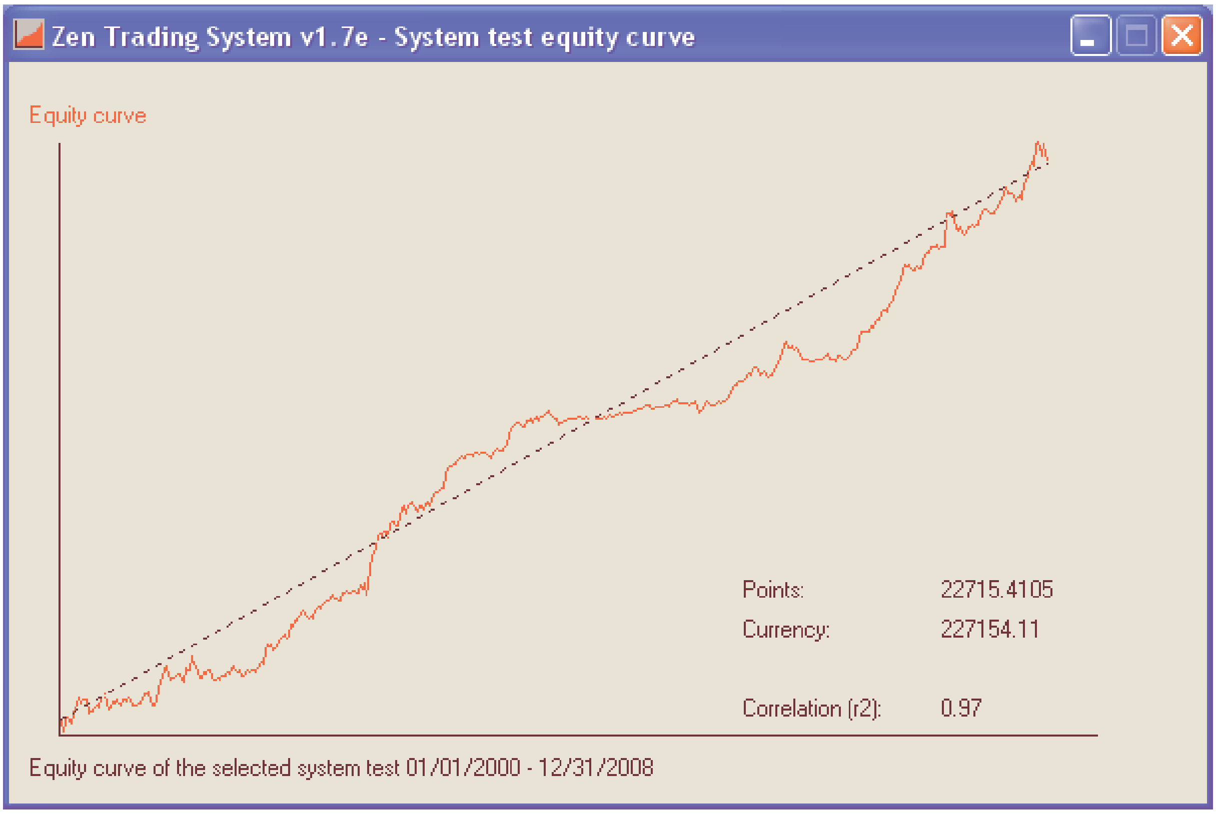
This system test uses a minimal risk management strategy with so-called “disaster stops”.

Risk management: “disaster stop” of 5%

Moneymanagement: position size of 10 CFD contracts



The equity curve of this system test:



Results:

- The system test results from 01/01/2000 to 12/31/2008 are **22,715 Dax points.**
- This corresponds to a total profit of €227.154 or an annual profit of €25.019.
- 60.02% of the trades were profitable.
- Max. drawdown is (-€11,059).
- The **annual performance** concerning the initial trading capital of von €20,000 is **125%.**
- The profitability index or profit factor is 1.70
- MAR Ratio is 2.26

5. System test with stops and trailing stops

The next system test uses stops and trailing stops.

Please notice, that the use of this test model in practise depends on the possibilities of your trading platform and of the conditions your trading provider (broker etc.).

Conditions for these tests:

a) Use of guaranteed stops (GSL)
b) 1:1 model of the Xetra Dax Index as trading instrument (provided by your trading partner)

Concerning premise (a) for our example we use volatility stop and a trailing stop.

Premise (b) currently is not or seldom fulfilled through standard trading partners, because they don't offer the original Dax Index instrument (with trading time from 09.00 to 17.35 CET*). Instead the provider offer synthetic products with trading times from 08.00 to 22.00 CET or even 24h trading. As for the latter, however, no proven historical test data is available, it is expected that with such products in the real trading process stops will be triggered possibly more often than in the test scenario!

Despite the above mentioned test issue, it is important to test also such scenarios, as risk management should be an essential part of any trading strategy.

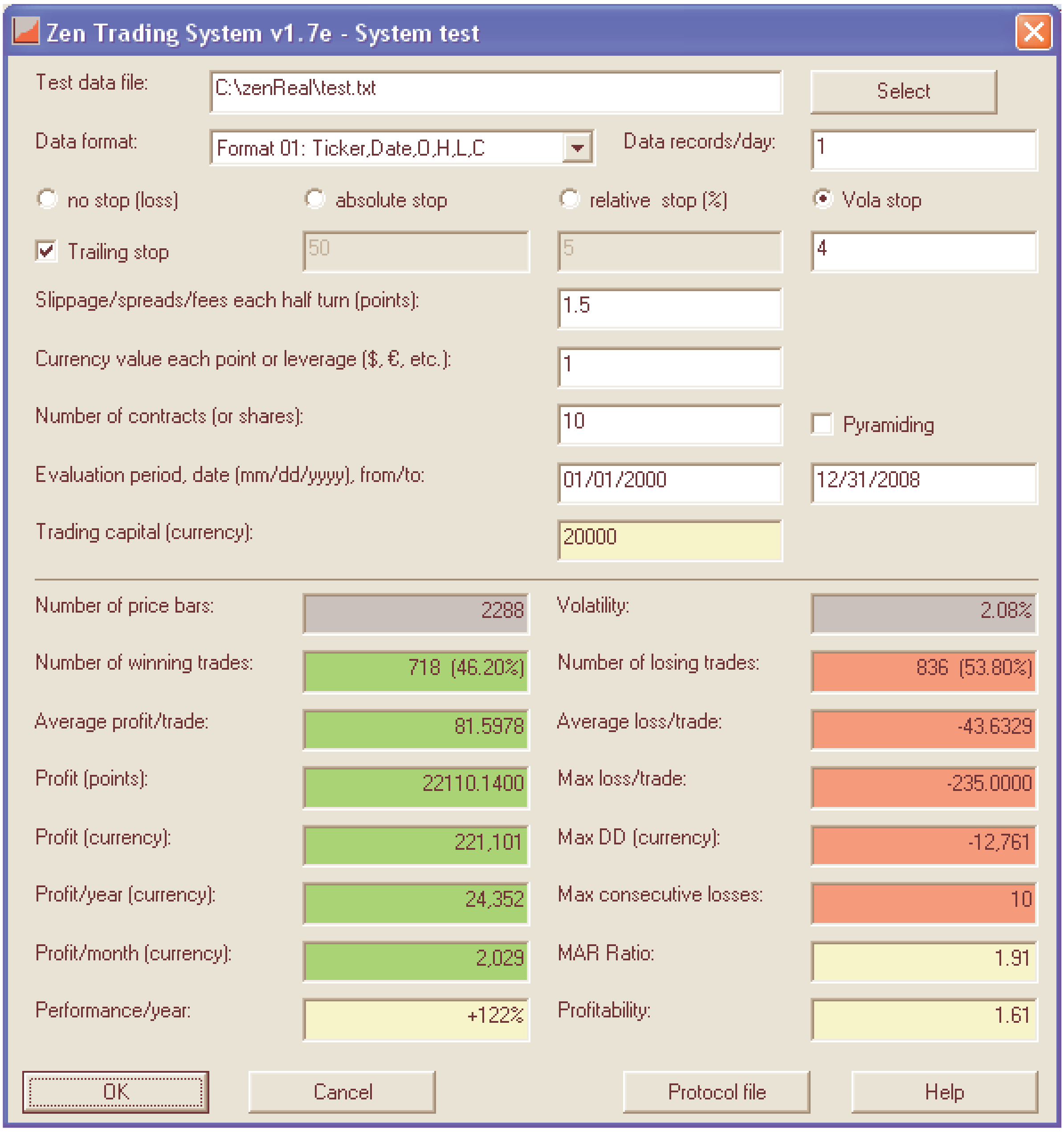
*CET = Central European Time

17.35 CET (Dax Index Close) = 18.35 GMT or 11.35 am ET

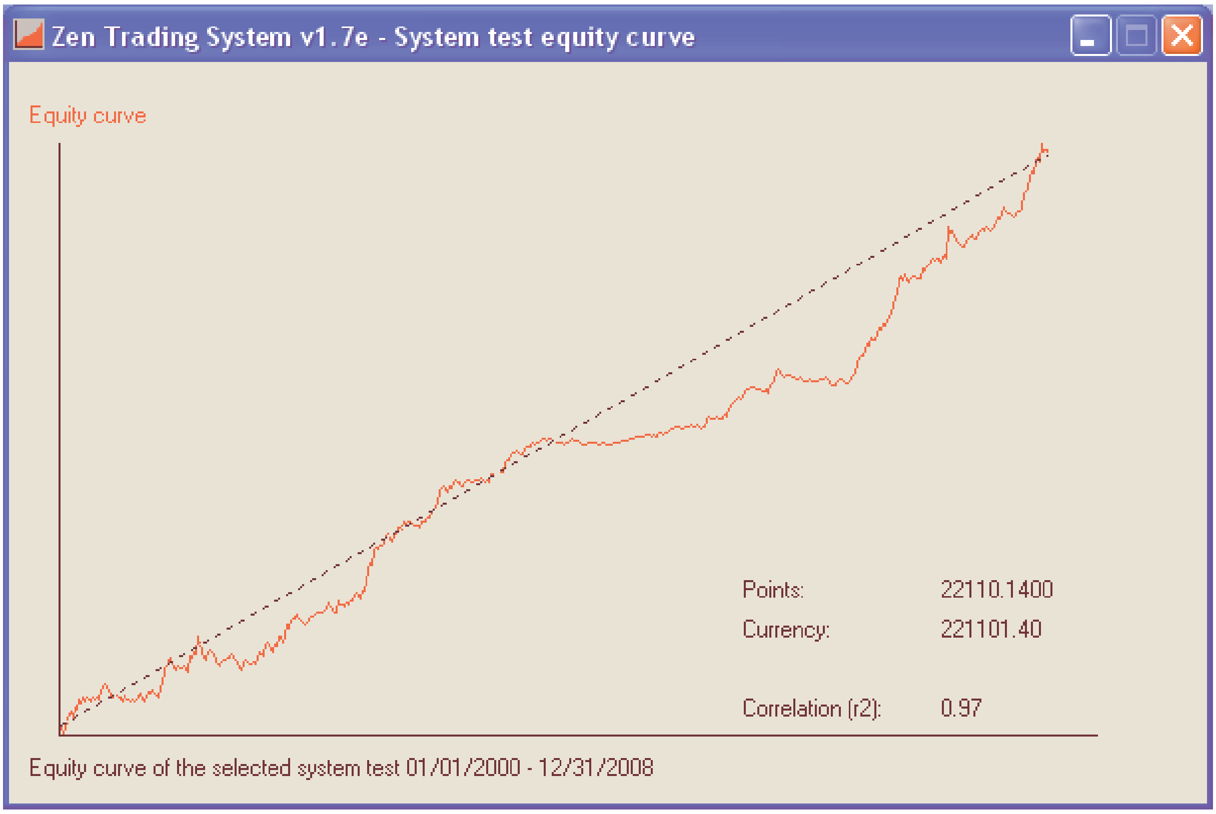
Summary of the conditions for this test:

Risk management: volatility stop loss (stop factor 4) and trailing stop

Moneymanagement: position size of 10 CFD contracts



The equity curve of this system test:



Results:

- The system test results from 01/01/2000 to 12/31/2008 are **21,110 Dax points.**
- This corresponds to a total profit of €221,101 or an annual profit of €24,352.
- 46.20% of the trades were profitable, but the payoff ratio (average profit per trade / average loss per trade) is far better compared to the tests without stops
- Max. drawdown is (-€12,761).
- The **annual performance** concerning the trading capital of von €20,000 is **122%.**
- The profitability index or profit factor is 1.61
- MAR Ratio is 1.91

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6. Monte Carlo Simulation (System simulation)

The system simulation or stress tests on basis of the Monte Carlo Simulation method refer to the existing system tests, which were provided with historical data of the DAX index.

Basis of the simulation is a system test with strong risk management, thus with stop loss and trailing stop, but without pyramiding.

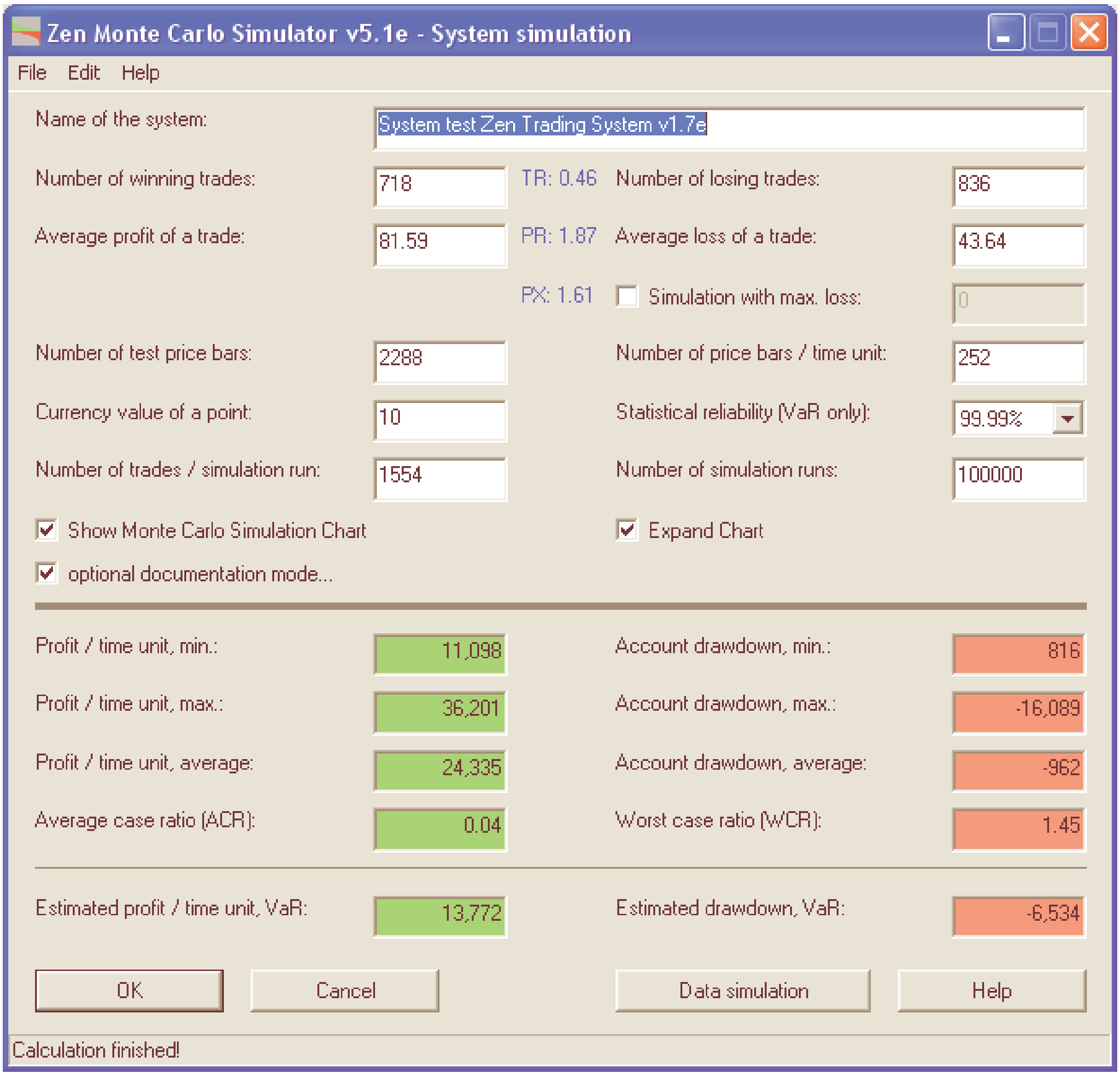
The time period lasts from 01/01/2000 to 12/31/2008 with 1,554 trades and this whole period was simulated 100,000 times.

In summary there were executed 155 million simulated trades.

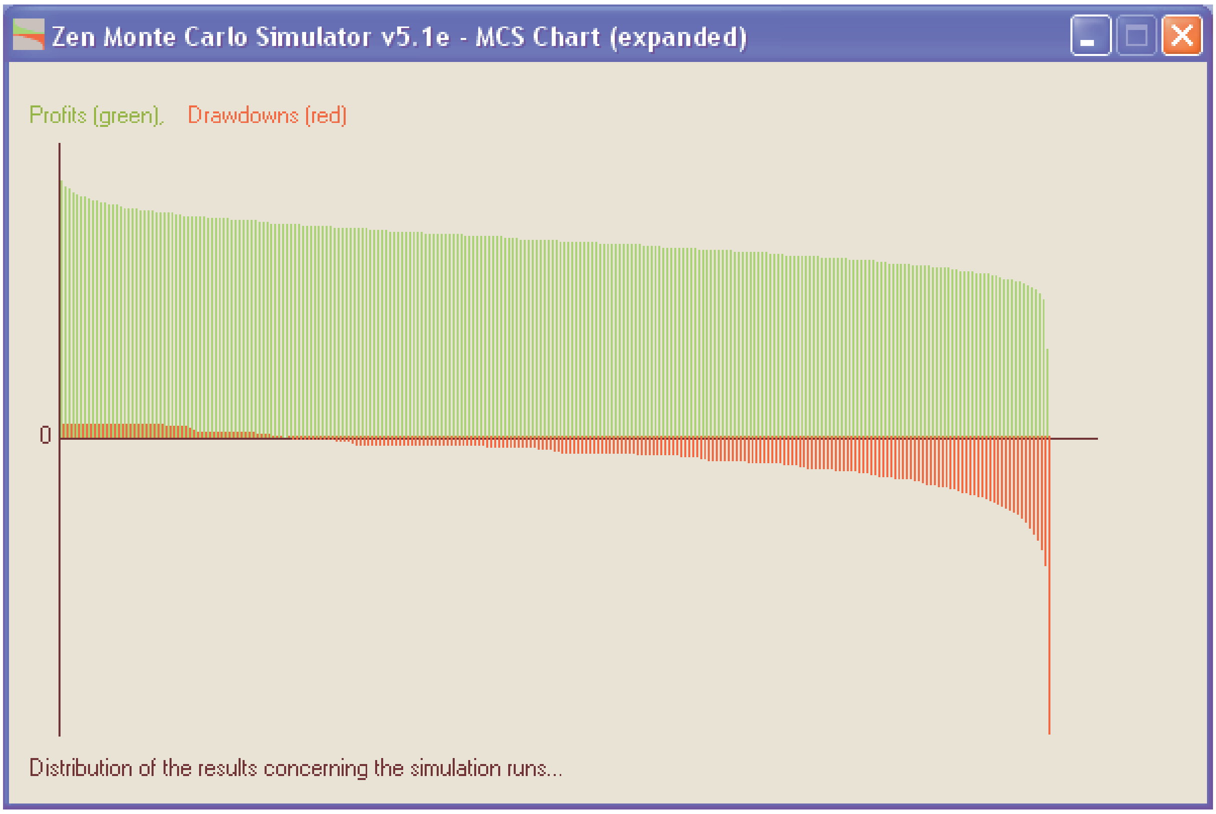
Using the specialized software product **Zen Monte Carlo Simulator v5.1e** this calculations can be realized on a usual PC in an extreme fast runtime (here only 17 seconds).

Performance and ratios of the Zen Trading System

Results of the system simulation:



Distribution chart:



Results:

- The annual average profit of the simulation was €24,335 (the original system test with historical data shows here €24,352). The annual profits vary thereby in the simulation between €11,098 and €36,201.

- Max. drawdown was (-€16,089). The original system test shows a max. DD of (-€12,761).

- The average case ratio ACR expresses, after which time an average drawdown will be balanced with an average profit. This value here is outstanding 0.04. I.e. at the latest after 10 trading days (0.04 * 252 trading days/year) the capital curve is again in the plus!

- The optional VaR analysis estimates with a 99.99% reliability (premise: monte carlo simulation results are normal distributed), that there is a minimum annual profit of €13,772 and a max. drawdown of (-€6,534) is not exceeded.

Summary

The **Zen Trading System v1.7e** for the trade of the german Xetra DAX Index on a daily basis is a very profitable mechanical trading system with a high performance.

The tests with the original historical data from 01/01/2000 to 12/31/2008 were accomplished inclusive transaction costs without stops, without stops but with pyramiding as well as with stops and trailing stops.

The best result for a realistic and in practise 1:1 tradable test was more than 22,800 Dax points or ca. €228,000.

Basis for this was a trading model with an initial position size of 10 CFD contracts. Using an additional pyramiding model leads to an increase of more than 50% to ca. €360,000.

The annual performance concerning the sufficient trading capital of € 20,000 was well above 100%.

Additional tests with stops (risk management model) were also performed successfully using the premises described before.

In subsequently conducted stress tests, based on the Monte Carlo Simulation method based on 155 million simulated trades were executed to show the stability of the trading system setup under the prevailing market conditions.

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