

Trend Runner System

The quest to find a trading system that will help put money in the bank can be difficult and frustrating. Often what has worked in the past might not work now. Though a system might be sound, its parameters may just need to be adjusted. The more complex a trading system's design, the more variations in settings where some might yield a higher win percentage while others have a higher per trade average.

Designing a trading system takes a lot of work and testing, testing, testing. The Optimizer in Ensign 10 shortens the research time by rapidly testing a large variety of parameter settings. The Optimizer can perform hundreds of iterations and evaluate settings that otherwise might not have been considered. Lets see how the Optimizer can improve a trading system.

Of course it needs something to optimize. The following Trend Runner system is designed around a trailing stop. No implication is made that this system makes money, or that it works in all markets or with all time frames. It is just an example to illustrate designing a system, using the Optimizer, dressing the chart with information, and emailing notifications of system events.

"Past Performance is not an indicator of future results."



The system uses a trailing stop whose value is the highest high or lowest low of the last N number of bars. And there is a bias for being long or short based on a moving average. Thus there are two study parameters that are worthy of testing different variations. One is the number of bars in the look back period for the trailing stop, and the other is the parameter for the moving average that determines when the trades are entered.

The Trend Runner system requires several DYOs to implement. Some of the DYOs implement the trade rules, some create the 'eye candy' for showing trade results, and some send email notifications. Though the system looks complex, it is worthy of being studied to understand how a trading system can be designed and optimized. Lets begin.

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Study Settings

This DYO initializes variables and calculates the exit stops and the moving average.

Category	Variable	Selection #1 & #3	Op. (#)	Selection #2 & #4	Offset	Show Marker	Color
Branching	0	= if # then go ahead [#] rows	4	Optimizer Running	0	<input type="checkbox"/>	
A	Branching	if Optimizer Running then go ahead 4 rows					
B	Expression	[Stop Period] := 75				<input type="checkbox"/>	
C	Expression	[Ave Period] := 16				<input type="checkbox"/>	
D	Expression	[Send Email] := False				<input type="checkbox"/>	
E	Expression	[Profit Target] := 100				<input type="checkbox"/>	
F	Expression	[Leverage] := 100000				<input type="checkbox"/>	
G	Function	[Upper Stop] := Highest(High, [Stop Period])				<input type="checkbox"/>	Green
H	Function	[Lower Stop] := Lowest(Low, [Stop Period])				<input type="checkbox"/>	Red
I	Function	[Average] := Simple Average(Close, [Ave Period])				<input checked="" type="checkbox"/>	Cyan Study Value
J						<input type="checkbox"/>	
K	Expression	[UpperMoved] := [G] < [G][-1]				<input type="checkbox"/>	Light Green ZON
L	Expression	[LowerMoved] := [H] > [H][-1]				<input type="checkbox"/>	Light Red ZON

A – During normal operation, the Optimizer is not running, and therefore, execution will flow to row B. When the Optimizer is running, row B and C need to be skipped because the Optimizer will set the Stop Period value and the Ave Period value.

D – This variable is a flag for enabling or disabling the sending of email notifications.

E – Set a Profit Target for the purpose of sending an email when this profit has been reached.

F – The leverage is used to convert PIPS to Dollars.

G & H - Find the highest high or lowest low of the last N bars. N has been stored in the Stop Period variable so that the Optimizer can change it. In order for the operator field to read a variable the index needs to be in the range of 200 through 230. The index for the Stop Period variable is 202.

I – Calculate a simple average, where the period parameter is stored in a variable so it can be changed by the Optimizer. The Ave Period parameter is stored in variable 203. The average determines when a trade is entered depending on its relationship to the high or low of the bar.

K – This Boolean flag will be True when the row G Upper Stop is lowered. This flag controls sending an email notification that the Buy Stop has been moved.

L – This Boolean flag will be True when the row H Lower Stop is raised. This flag controls sending an email notification that the Sell Stop has been moved.

Trades

This DY0 implements the rules for buying, selling, and exiting trades.

A	Action	if Position is Flat AND (Low >= [Average]) then Buy Market	<input type="checkbox"/>				
B	Action	if Position is Flat AND (High <= [Average]) then Sell Market	<input type="checkbox"/>				
C			<input type="checkbox"/>				
D	Action	if (Low <= [Lower Stop]) then Exit Long Position	<input type="checkbox"/>				
E	Action	if (High >= [Upper Stop]) then Exit Short Position	<input type="checkbox"/>				
F			<input type="checkbox"/>				
G	Action	[0] := [Lower Stop]; if (Position is Long) then plot V	<input checked="" type="checkbox"/>	<input type="checkbox"/>		Study Value	[Lower Stop]
H	Action	[0] := [Upper Stop]; if (Position is Short) then plot V	<input checked="" type="checkbox"/>	<input type="checkbox"/>		Study Value	[Upper Stop]

A – Buy at the Market when the Position is Flat and the bar's Low is above the Average.

B – Sell at the Market when the Position is Flat and the bar's High is below the Average.

D – Exit a Long Position when the bar's Low touches the trailing Lower Stop.

E – Exit a Short Position when the bar's High touches the trailing Upper Stop.

G – Plot the Lower Stop and show its current value when the Position is Long.

H – Plot the Upper Stop and show its current value when the Position is Short.

The Label Location for the stop values shown by row G and H is the Margin 2 selection.

This DY0 has its Close Only box checked so the evaluation is done at the end of the bar, and the bar's Close price is used as the trade's execution price. The trade quantity is 1.

Profit Curve

This DYO shows the Profit Curve in the sub-window and labels the current total. This DYO is 'eye candy' that shows the ebb and flow of the profit. This DYO could be added to other trade systems that executed their trades using DYO statements to buy, sell and exit positions.

Study Name Profit Curve	Study Location Window 5	Marker Location Study Value	Label Location Margin 2	Grid Tab Default	<input type="checkbox"/> Use as Default			
Study Scale Data Set +5%			Variables File -TrendRunner	Message Location None	<input type="checkbox"/> Plot Behind Bars			
Message Text	Font	True	False	Panel	<input type="checkbox"/> Privatize			
					<input checked="" type="checkbox"/> Close Only			
Sound	Trading System				<input type="checkbox"/> Email			
<input checked="" type="radio"/> Silent	<input type="radio"/> Beep	<input type="radio"/> Voice	<input type="radio"/> WAV	<input type="checkbox"/> Sound once per bar	<input type="checkbox"/> Auto Remove			
WAV file	Price Close	Quantity 1	Commission 0		<input checked="" type="checkbox"/> Auto Completion			
Category	Variable	Selection #1 & #3	Op. [#]	Selection #2 & #4	Offset	Show	Marker	Color
Expression	19 Profit	= Total Dollars	+	Profit Dollars	0	<input checked="" type="checkbox"/>		
		(0			
A	Expression	[Profit] := Total Dollars + Profit Dollars		<input checked="" type="checkbox"/>			Paint Color	
B	Expression	[0] := [Profit] < 0		<input checked="" type="checkbox"/>			Paint Color	
C	Expression	[0] := [Profit]		<input checked="" type="checkbox"/>			Study Value	
D	Action	[0] := 0; if (True) then plot V		<input checked="" type="checkbox"/>			Study Value	
E	Expression	[0] := [Profit]		<input checked="" type="checkbox"/>			Study Value	\$(Profit.)

A – The total profit is the sum of the Total Dollars in the closed positions plus the Profit Dollars in the current open trade (if any). This line also initializes the paint can color to green.

B – Change the paint can color to red if the Profit is less than zero.

C – Plot the Profit using the Fill marker with Black as the color selected. Black is the special case color that will use the color in the paint can set by row A or row B. Thus the fill color is either green or red. The fill is between the Profit value on row C and the value on row D.

D – This statement's value is a zero so the row C fill will color both positive and negative fills to zero on the sub-window scale.

E – Plot the Profit curve with a thick blue line, and post its value in the Margin 2 position.

The Grid Lines object for sub-window 5 can be configured to show more or fewer grid lines, and control the grid line style, colors, and labels.

At Risk

This DY0 calculates and shows the information in the first 2 sections below the chart.

A	Expression	[At Risk] := 0	<input type="checkbox"/>				
B	Branching	if Position is Long then do next row	<input type="checkbox"/>				
C	Expression	[At Risk] := (Long Entry Price - [Lower Stop]) * [Leverage]	<input type="checkbox"/>				
D	Branching	if Position is Short then do next row	<input type="checkbox"/>				
E	Expression	[At Risk] := ([Upper Stop] - Short Entry Price) * [Leverage]	<input type="checkbox"/>				
F	Action	if ([At Risk] < 0) then [At Risk] := 0	<input type="checkbox"/>				
G	Expression	[0] := 0	<input checked="" type="checkbox"/>		Study Value	1 At Risk,\$[At	
H	Expression	[ProfitDollars] := Profit Dollars	<input checked="" type="checkbox"/>		Study Value	2 Current	
I	Action	if (Position goes Long OR Position goes Short) then [Index] := Bar Index	<input type="checkbox"/>				
J	Expression	[Profit Period] := Bar Count - [Index]	<input type="checkbox"/>				
K	Function	[HighestHigh] := Highest(High, [Profit Period])	<input type="checkbox"/>				
L	Function	[LowestLow] := Lowest(Low, [Profit Period])	<input type="checkbox"/>				

A – A variable named At Risk is initialized to zero.

B & C – If the Position is Long, At Risk is calculated using the Long Entry Price and the Lower Stop.

D & C – If the Position is Short, At Risk is calculated using the Short Entry Price and the Upper Stop.

F – If At Risk is a negative value, it means the Stops have moved beyond the entry prices and locked in a profit. The At Risk is therefore set to zero.

G – This row posts the text and the At Risk value in section 1 on a red background.

H – This row posts the text and the Current Trade value in section 2 on a blue background.

Rows I, J, K and L are making calculations for finding two values for the current trade: its Maximum Draw Down and its Maximum Profit.

I – Initialize a variable with the bar index when a new trade position is taken.

J – Calculate the number of bars since a position was taken. This is the look back period.

K – Find the HighestHigh in the look back period since the trade was taken.

L – Find the LowestLow in the look back period since the trade was taken.

Values from rows K and L will be used in the next DY0 to Calculate Stats.

Calculate Stats

This DY0 will calculate the Draw Down, the Max Profit, and the Locked Profit for the current trade.

A	Branching	if Not Position is Long then go ahead 5 rows	<input type="checkbox"/>
B	Expression	[Draw Down] := (Long Entry Price - [LowestLow]) * [Leverage]	<input type="checkbox"/>
C	Expression	[Max Profit] := ([HighestHigh] - Long Entry Price) * [Leverage]	<input type="checkbox"/>
D	Expression	[Locked Profit] := ([Lower Stop] - Long Entry Price) * [Leverage]	<input type="checkbox"/>
E			<input type="checkbox"/>
F	Branching	if Not Position is Short then go ahead 5 rows	<input type="checkbox"/>
G	Expression	[Draw Down] := ([HighestHigh] - Short Entry Price) * [Leverage]	<input type="checkbox"/>
H	Expression	[Max Profit] := (Short Entry Price - [LowestLow]) * [Leverage]	<input type="checkbox"/>
I	Expression	[Locked Profit] := (Short Entry Price - [Upper Stop]) * [Leverage]	<input type="checkbox"/>
J			<input type="checkbox"/>
K	Action	if ([Locked Profit] < 0) then [Locked Profit] := 0	<input type="checkbox"/>

A – Skip down to row F unless the Position is Long. Row B, C and D are calculations for a Long Position.

B – The maximum Draw Down is the spread from the Entry Price to the LowestLow.

C – The maximum Profit is the spread from the HighestHigh to the Entry Price.

D – Locked Profit is the spread between the Lower Stop and the Entry Price.

F – Skip down to row K unless the Position is Short. Row G, H and I are calculations for a Short Position.

G – The maximum Draw Down is the spread from the HighestHigh and the Entry Price.



H – The maximum Profit is the spread from the Entry Price and the LowestLow.

I – Locked Profit is the spread between the Entry Price and the Upper Stop.

K – If the Locked Profit value is less than zero, reset it to zero. Only positive values represent a profit that has been locked in by the exit stop being beyond the entry price.

Show Stats

This DY0 shows titles in sections 3, 4 and 5, and the values calculated by the prior DY0.

A	Expression	[0] := 0	<input checked="" type="checkbox"/>		Study Value	3 Max Draw
B	Expression	[0] := 0	<input checked="" type="checkbox"/>		Study Value	4 Trade
C	Expression	[0] := 0	<input checked="" type="checkbox"/>		Study Value	5 Locked

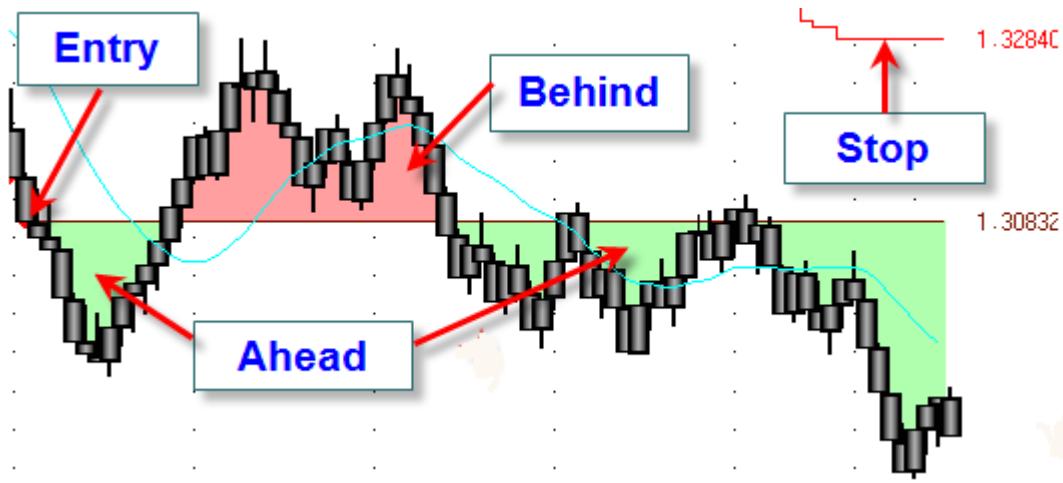
A – The row label posts the title and the value. Its full entry looks like this:

|3|Max Draw Down,\$[13.2]

|3| is section 3. 'Max Draw Down' is the title. Comma starts a 2nd line. \$ is text. [13.2] is variable [13] which is the Draw Down variable, and .2 formats the value to show 2 decimals.

Fill Markers

The next DYO is more 'eye candy' which colors the zone between the bars and the trade entry price. Profitable positions are colored green, and losing positions are colored red.



This example shows when the short position is profitable (green fill) and behind (red fill). The exit stop is trailing behind and recently lowered to 1.32840. The short entry price is 1.30832.

A	Branching	if Position is Flat then abort execution	<input type="checkbox"/>		
B	Action	if Position is Long then [TradePrice] := Long Entry Price else [TradePrice]	<input type="checkbox"/>		
C	Expression	[0] := Profit Points >= 0	<input checked="" type="checkbox"/>		Paint Color
D	Expression	[0] := Profit Points < 0	<input checked="" type="checkbox"/>		Paint Color
E	Expression	[0] := [TradePrice]	<input checked="" type="checkbox"/>		Study Value
F	Expression	[0] := Close	<input type="checkbox"/>		

A – Exit this DYO when the Position is Flat. There is nothing to do when flat.

B – If the Position is Long then the TradePrice is the Long Entry Price. If the Position is Short the TradePrice is the Short Entry Price.

C – Initialize the paint can color to green when the trade is profitable.

D – Initialize the paint can color to red when the trade is losing money.

E – Fill the zone between 2 prices using the paint can color. The 2 prices for the fill are the TradePrice on row E and the bar's Close price on the next row which is row F.

This DYO has the Plot Behind Bars box checked so the bars show on top of the fill.

Trade Markers

This DY0 adds more 'eye candy' to show the entry price, entry and exit points, and a color bar on the bottom of the screen representing the direction of the trade. The bar is green for a Long position and red for a Short position.

A	Expression	[0] := Long Entry Price	<input checked="" type="checkbox"/>	—		Study Value [A]	
B	Expression	[0] := Short Entry Price	<input checked="" type="checkbox"/>	—		Study Value [B]	
C			<input type="checkbox"/>				
D	Expression	[0] := Position goes Flat	<input checked="" type="checkbox"/>	×		Last	
E	Expression	[0] := Position goes Long	<input checked="" type="checkbox"/>	●		Last	
F	Expression	[0] := Position goes Short	<input checked="" type="checkbox"/>	●		Last	
G	Expression	[0] := Position is Long	<input checked="" type="checkbox"/>			Bottom Row	
H	Expression	[0] := Position is Short	<input checked="" type="checkbox"/>			Bottom Row	
I			<input type="checkbox"/>				
J	Expression	[0] := Position is Long	<input checked="" type="checkbox"/>			Study Value	
K	Expression	[0] := Position is Short	<input checked="" type="checkbox"/>			Study Value	

A – Plot a line at the Long Entry Price in dark green and show its value in the margin.

B – Plot a line at the Short Entry Price in dark red and show its value in the margin.

D – Place a X marker on the bar's Last price when a trade is exited.

E – Place a green dot marker on the bar's Last price when a Long position is taken.

F – Place a red dot marker on the bar's Last price when a Short position is taken.

G – Plot a fat green bar on the bottom of the chart while the Position is Long.

H – Plot a fat red bar on the bottom of the chart while the Position is Short.

J & I – Color Bar the candlestick body green or red depending on the position being Long or Short. The yellow highlight on the DY0 form indicates the lines are currently commented out and not executed. But they could be activated by selecting Expression in the Category drop down box. They are included in the example to show how the candlesticks could be colored based on the position. The Color Bars study selection must be on the Normal selection so that Color Bars does not compete with the DY0 in coloring the candles.

Email Notifications

The remaining DY0s send email when alert conditions are triggered. Email can be enabled or disabled with the Send Email variable in the Study Settings DY0. All of the DY0s that send email have their Close Only box checked so they evaluate once per bar.

Email is sent spaced at least 60 seconds apart. If email to send is pending, the message is inserted at the top of the email body and becomes the email Subject. Use the 'if # then Text Message' statement if you do not want the body to accumulate messages.

Move SELL Stop

An email is sent any time the Sell Stop is raised.

Message Text		Font	True	False	Panel
Move SELL Stop to [51] - CT [18] - HP [14] - WDD [13]		Black	Green	Red	Yellow
Sound			Trading System		
<input checked="" type="radio"/> Silent <input type="radio"/> Beep <input type="radio"/> Voice <input type="radio"/> WAV <input type="checkbox"/> Sound once per bar			Price		
WAV file			Close		
<input type="text"/> <input type="button" value="Browse"/>					
Category	Variable	Selection #1 & #3	Op. [#]	Selection #2 & #4	
Branching	0	= if # then do next row			
		([LowerMoved]	ANC	Position is Short	
A	Branching	if ([LowerMoved] AND Position is Short) then do next row		<input type="checkbox"/>	
B	Action	if [Send Email] then E-mail 'Move SELL Stop to [51] - CT [18] - HP [14] -		<input type="checkbox"/>	

A – Do the next row when the Lower Stop is raised and the Position is Short.

B – Conditionally send the email. The message for the email comes from the Message Text edit box. Variables in the text are resolved to show their values.

[51] is the Lower Stop value

[18] is the Current Trade profit

[14] is the Maximum Profit

[13] is the Maximum Draw Down

Move BUY Stop

This DYO is similar to the Move Sell Stop DYO. It will send an email when the Buy Stop is lowered and the Position is Long.

Message Text		Font	True	False	Panel
Move BUY Stop to [51] - CT [18] - HP [14] - WDD [13]		Black	Green	Red	Yellow
Sound			Trading System		
<input checked="" type="radio"/> Silent <input type="radio"/> Beep <input type="radio"/> Voice <input type="radio"/> WAV <input type="checkbox"/> Sound once per bar			Price		
WAV file			Close		
<input type="text"/> <input type="button" value="Browse"/>					
Category	Variable	Selection #1 & #3	Op. [#]	Selection #2 & #4	
Branching	0	= if # then do next row			
		([UpperMoved]	ANC	Position is Long	
A	Branching	if ([UpperMoved] AND Position is Long) then do next row		<input type="checkbox"/>	
B	Action	if [Send Email] then E-mail 'Move BUY Stop to [51] - CT [18] - HP [14] -		<input type="checkbox"/>	

Profit Target

This DYO will email a notification when the Profit Target objective has been achieved.

Message Text		Font	True	False	Panel
Profit Target Hit [201] - Last [\$C] - HP [14.2] - WDD [13]		Black	Green	Red	Yellow
Sound			Trading System		
<input checked="" type="radio"/> Silent <input type="radio"/> Beep <input type="radio"/> Voice <input type="radio"/> WAV <input type="checkbox"/> Sound once per bar			Price: <input type="text" value="Close"/> Quantity: <input type="text" value="1"/>		
WAV file			Browse		
Category	Variable	Selection #1 & #3	Op. [#]	Selection #2 & #4	Offset
Expression	0	= Profit Dollars	>=	[Profit Target]	0
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>					
A	Expression	[0] := Profit Dollars >= [Profit Target]			<input type="checkbox"/>
B	Flag	[0] := [A] goes True			<input type="checkbox"/>
C	Action	if [Send Email] AND [B] then E-mail 'Profit Target Hit [201] - Last [\$C] - HP			<input type="checkbox"/>

A – This is a Boolean flag that is true when the current trade's profit reaches the Profit Target.

B – This is a flag that is only true when row B goes True.

C – Conditionally send the email when row B is True. The email's text is from the Message Text edit box.

[201] is the Profit Target value
 [\$C] is the bar's Close value
 [14.2] is the Maximum Profit, formatted for 2 decimals.
 [13] is the maximum Draw Down

BUY/SELL Entry

This DYO will send an email when a new position is taken.

A	Expression	[0] := Long Entry Price	<input type="checkbox"/>			
B	Action	if Position goes Long AND [Send Email] then E-mail 'BUY @ [A]. Stop @	<input checked="" type="checkbox"/>		Study Value	BUY @ [A]. Stop @
C	Expression	[0] := Short Entry Price	<input type="checkbox"/>			
D	Action	if Position goes Short AND [Send Email] then E-mail 'SELL @ [C]. Stop @	<input checked="" type="checkbox"/>		Study Value	SELL @ [C]. Stop @

A & B – Send an email when a Long Position is taken. The message text is located in the row B label.

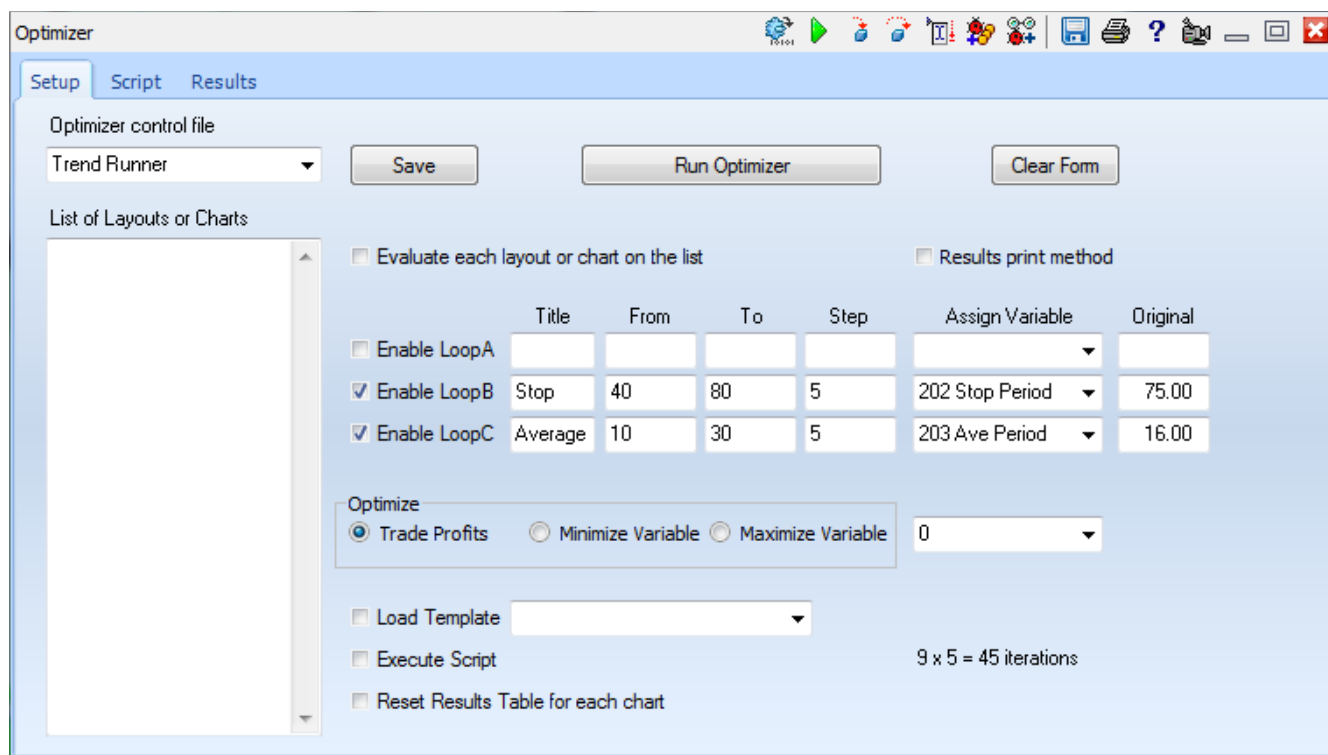
C & D – Send an email when a Short Position is taken. The message text is located in the row D label.

Optimizer

Now that the Trend Runner system is designed and looks promising, it is then time to employ the Optimizer to rapidly generate comparative results.

Row A of the Study Settings DYO performs an important purpose for the Optimizer. When the Optimizer is running, it is the Optimizer that is setting the values in the row B and C variables, and thus setting values by the DYO needs to be avoided. Therefore, the Optimizer flag is tested and when it is True the Optimizer is running. When True the execution of row B and row C is skipped.

To run the Optimizer, click on the Optimizer button on the Setup ribbon.



The screenshot shows the Optimizer software interface with the Setup tab selected. The interface includes a toolbar at the top, a ribbon with Setup, Script, and Results tabs, and a main control area. The control area contains an "Optimizer control file" dropdown set to "Trend Runner", with "Save", "Run Optimizer", and "Clear Form" buttons. Below this is a "List of Layouts or Charts" list box. The main configuration section includes checkboxes for "Evaluate each layout or chart on the list" and "Results print method". A table lists optimization loops with columns for Title, From, To, Step, Assign Variable, and Original. The "Optimize" section has radio buttons for "Trade Profits" (selected), "Minimize Variable", and "Maximize Variable", along with a dropdown set to "0". Other options include "Load Template", "Execute Script", and "Reset Results Table for each chart". A status indicator shows "9 x 5 = 45 iterations".

	Title	From	To	Step	Assign Variable	Original
<input type="checkbox"/> Enable LoopA						
<input checked="" type="checkbox"/> Enable LoopB	Stop	40	80	5	202 Stop Period	75.00
<input checked="" type="checkbox"/> Enable LoopC	Average	10	30	5	203 Ave Period	16.00

Loop A is not used in this example, so the Enable LoopA check box is unchecked.

Loop B will iterate the stop look back period in variable 202. It will be evaluated from 40 to 80 in increments of 5, such as 40, 45, 50 and so forth.

Loop C will iterate the moving average parameter in variable 203 between 10 and 30 in increments of 5.

The objective is to maximize Trade Profits and so that option is checked in the Optimize section.

Because the chart to optimize is already open and dressed with the trading system, there is no need to load any template or iterate through a list of layouts or charts.

Now click the Run Optimizer button, and the Results table will be populated.

	Chart		Stop	Average	Win #	Loss #	Total #	% Win	\$ Win	\$ Loss	Profit	Ratio	Average
23	EUR_USD.R100	0.0000	55.00	30.00	13	23	36	36	9653	-9190	463	1.0504	12.86
25	EUR_USD.R100	0.0000	60.00	10.0000	13	23	36	36	9402	-9082	320	1.0352	8.8881
26	EUR_USD.R100	0.0000	60.00	15.00	13	22	35	37	9851	-8420	1431	1.1699	40.89
27	EUR_USD.R100	0.0000	60.00	20.00	13	23	36	36	9406	-8946	460	1.0514	12.78
28	EUR_USD.R100	0.0000	60.00	25.00	13	23	36	36	9551	-8946	605	1.0676	16.80
29	EUR_USD.R100	0.0000	60.00	30.00	13	23	36	36	9551	-8946	605	1.0676	16.80
31	EUR_USD.R100	0.0000	65.00	10.0000	13	16	29	45	9838	-6172	3666	1.5940	126.41
32	EUR_USD.R100	0.0000	65.00	15.00	13	16	29	45	9926	-6172	3754	1.6082	129.45
33	EUR_USD.R100	0.0000	65.00	20.00	12	18	30	40	9694	-7248	2446	1.3375	81.53
34	EUR_USD.R100	0.0000	65.00	25.00	12	18	30	40	9839	-7248	2591	1.3575	86.37
35	EUR_USD.R100	0.0000	65.00	30.00	12	18	30	40	9839	-7248	2591	1.3575	86.37
37	EUR_USD.R100	0.0000	70.00	10.0000	11	15	26	42	9707	-5818	3889	1.6684	149.58
38	EUR_USD.R100	0.0000	70.00	15.00	11	15	26	42	9934	-5818	4116	1.7075	158.31
39	EUR_USD.R100	0.0000	70.00	20.00	11	15	26	42	9906	-5818	4088	1.7026	157.23
40	EUR_USD.R100	0.0000	70.00	25.00	11	15	26	42	9906	-5818	4088	1.7026	157.23
41	EUR_USD.R100	0.0000	70.00	30.00	11	15	26	42	9906	-5818	4088	1.7026	157.23
43	EUR_USD.R100	0.0000	75.00	10.0000	10	12	22	45	10314	-3462	6852	2.9792	311.46
44	EUR_USD.R100	0.0000	75.00	15.00	10	12	22	45	9578	-4234	5344	2.2622	242.91
45	EUR_USD.R100	0.0000	75.00	20.00	10	12	22	45	9578	-4234	5344	2.2622	242.91
46	EUR_USD.R100	0.0000	75.00	25.00	10	12	22	45	9578	-4234	5344	2.2622	242.91
47	EUR_USD.R100	0.0000	75.00	30.00	10	12	22	45	9578	-4234	5344	2.2622	242.91
49	EUR_USD.R100	0.0000	80.00	10.0000	8	13	21	38	9871	-3962	5909	2.4914	281.38
50	EUR_USD.R100	0.0000	80.00	15.00	8	12	20	40	9968	-3876	6092	2.5717	304.60
51	EUR_USD.R100	0.0000	80.00	20.00	8	12	20	40	9968	-3876	6092	2.5717	304.60
52	EUR_USD.R100	0.0000	80.00	25.00	8	12	20	40	9968	-3876	6092	2.5717	304.60
53	EUR_USD.R100	0.0000	80.00	30.00	8	12	20	40	9968	-3876	6092	2.5717	304.60

The highlighted values are the ones that were the best for that section. The table can be scrolled to show all results, and various settings considered. The settings that yielded the Maximum Profit will be shown with a highlight in the outer most loop, and that is row 43 in the example. The best settings of 75 and 10 are then posted back on the Setup tab.\

These results are also written to a text file in the C:\Ensign10\Optimizer folder using the chart's filename.

Trade Report

The optimized settings added about a thousand dollars to the Account Balance. Here is the trade history using the optimized settings. Click the Trade Report sub-menu of the Account button on the Main ribbon to show this form.

Trades		New	Edit								
Account Balance	\$	6,852.00	Winners	11	50	\$	10,314.00	Average Win	\$	937.64	
Market Value	\$	0.00	Losers	11	50	\$	-3,462.00	Average Loss	\$	-314.73	
Today's Change	\$	-116.99	Total	22		\$	6,852.00	Average Trade	\$	311.45	
Symbol	Pos	Quantity	EntryDate	EntryPrice	ExitPrice	Profit/Loss	Balance				
1	EUR/USD	S	1	02-09-12	1.32845	1.32845	\$ 0.00	\$ 0.00			
2	EUR/USD	L	1	02-09-12	1.33018	1.32715	\$ -303.00	\$ -303.00			
3	EUR/USD	S	1	02-09-12	1.32742	1.33058	\$ -316.00	\$ -619.00			
4	EUR/USD	L	1	02-09-12	1.32970	1.32600	\$ -370.00	\$ -989.00			
5	EUR/USD	S	1	02-10-12	1.32496	1.32613	\$ -117.00	\$ -1,106.00			
6	EUR/USD	L	1	02-13-12	1.32714	1.32121	\$ -593.00	\$ -1,699.00			
7	EUR/USD	S	1	02-13-12	1.32000	1.31796	\$ 204.00	\$ -1,495.00			
8	EUR/USD	S	1	02-15-12	1.31594	1.30340	\$ 1,254.00	\$ -241.00			
9	EUR/USD	L	1	02-16-12	1.30275	1.32345	\$ 2,070.00	\$ 1,829.00			
10	EUR/USD	S	1	02-21-12	1.32248	1.32541	\$ -293.00	\$ 1,536.00			
11	EUR/USD	L	1	02-23-12	1.32631	1.34164	\$ 1,533.00	\$ 3,069.00			
12	EUR/USD	S	1	02-27-12	1.34093	1.34388	\$ -295.00	\$ 2,774.00			
13	EUR/USD	L	1	02-28-12	1.34462	1.34216	\$ -246.00	\$ 2,528.00			
14	EUR/USD	S	1	02-29-12	1.34312	1.32221	\$ 2,091.00	\$ 4,619.00			
15	EUR/USD	L	1	03-05-12	1.32171	1.31754	\$ -417.00	\$ 4,202.00			
16	EUR/USD	S	1	03-06-12	1.31635	1.31631	\$ 4.00	\$ 4,206.00			
17	EUR/USD	L	1	03-07-12	1.31708	1.32270	\$ 562.00	\$ 4,768.00			
18	EUR/USD	S	1	03-09-12	1.32191	1.31436	\$ 755.00	\$ 5,523.00			
19	EUR/USD	L	1	03-12-12	1.31352	1.30926	\$ -426.00	\$ 5,097.00			
20	EUR/USD	S	1	03-13-12	1.30832	1.30571	\$ 261.00	\$ 5,358.00			
21	EUR/USD	S	1	03-15-12	1.30492	1.30578	\$ -86.00	\$ 5,272.00			
22	EUR/USD	L	1	03-15-12	1.30523	1.32103	\$ 1,580.00	\$ 6,852.00			

The system was designed for and run on a EUR/USD 100 Range chart with data from Feb 9th through March 21st, 2012. The optimized system made 22 trades in that period of time as shown in the trade report.

"Past Performance is not an indicator of future results."

Parameter Automation

The results from the Optimizer are saved in a text file in the \Optimizer\ folder using the chart's filename.

The C:\Ensign10\Optimizer\EUR_USD.R100.txt file has this content written by the Optimizer.

0.0000, 75.00, 10.0000

A DYO can read these results and automatically adopt the optimized settings. The Study Settings DY0 in this example could be changed to the following to set its variables with the Optimizer's results.

Category	Variable	Selection #1 & #3	Op. [#]	Selection #2 & #4	Offset
Function	202 Stop Period	= Optimizer Field(#2), Defau	2		0
		(75			0
A	Branching	if Optimizer Running OR (Initialization Flag = False) then go ahead 4			<input type="checkbox"/>
B	Function	[Stop Period] := Optimizer Field(2), Default (75)			<input type="checkbox"/>
C	Function	[Ave Period] := Optimizer Field(3), Default (15)			<input type="checkbox"/>

A – Row B and C are skipped when the Optimizer is running, or when the Initialization Flag is false. The Initialization Flag is True for the first execution call when the chart is evaluated. Once the Stop Period and Ave Period are initialized, it is a speed improvement to skip them for the rest of the chart's evaluation.

B – The Stop Period variable will be set to the Optimizer's Loop B result which is the 2nd field in the Optimizer results file. If the file does not exist, the Default value of 75 is assigned.

C – The Ave Period variable will be set to the Loop C result which is the 3rd field in the file. If the file does not exist, the Default value of 15 is assigned.

Template

This example trade system can be downloaded from the Ensign web site using the package feature. The package is named Template-TrendRunner and is found in Ensign's Official Folder. The template will be installed in the Template2 folder.