

# Instructions for the strategy

## 1. Main information about the strategy

**1.1** For this strategy we use just two trend indicators: **main** and **signal**. **StepMA-channel** is the **main indicator**, **StepMA+RSI** is the **signal indicator**.

**1.2** In this instruction I use the terms “whole trade” (or w-trade) and “partial trade” (or p-trade). Whole trade may be one only, i.e. it can be bullish or bearish when we decide to buy or sell the financial instrument. But there can be many partial trades that are included in the whole trade.

I also use the term “trend at the moment” (m-trend). M-trend is defined by the signal indicator; it can change many times while w-trade is remaining unchanged.

**1.3** The main strategy's idea is in crossing these indicators: when the signal indicator crosses the main indicator from bottom to top, we open a bullish w-trade; when the signal indicator crosses the main indicator from top to bottom, we open a bearish w-trade.

**1.4** The strategy works on the Tradingview, so you have to write code using Pine Script.

**1.5** Let's define

- all trading volume as **V**. For example, if we want to trade 200 lots, then **V=200**;
- lot size (number of units in 1 lot) as **LS**. For example, 1 lot of natural gas futures contains 100 units (1 LS = 100);
- **DDP** as a number of digits after the decimal point of the instrument price we are trading. For example, if we trade natural gas futures and its price equals 2,7639, then **DDP=4**.

**1.6** All variables (numbers that can change) here are colored **blue**, all parameters (they are defined in advance and cannot be changed) are colored **green**, all abbreviations are colored **orange**.

**1.7** Timeframe by default is 1 second but also there can be another timeframe (for example, 5 seconds or 1 minute).

**1.8** There is only one (so called) mechanism of opening the trades – **CIOM** which means “**C**rossing **I**ndicators **t**rades **O**pening **M**echanism” (we put 100% of **V** we need to open by pending limit/market order and waiting until it completes) and three different mechanisms of closing the trades (we close trades gradually by pending limit/market orders using **TMCM**, **SICM** and **CICM** (**T**arget **M**argins trades **C**losing **M**echanism, **S**ignal Indicator trades **C**losing **M**echanism, **C**rossing **I**ndicators trades **C**losing **M**echanism)).

**1.9** You have to create a window with input data on the screen (let's call it Input data **W**indow, or **IW**) with different buttons where I can set periods of indicators, set the features of functioning of some mechanisms, etc. Also you have to create a window where output information (opened and closed prices, volumes, profits etc) must be displayed - let's call it **O**utput data **W**indow, or **OW**. The structure and a view of both windows (**IW** and **OW**) are in the *attached Excel file*.

**1.10** Let's assume (as an example for this instruction) that we open a bullish g-trade on natural gas futures. The timeframe is 1 second. The signal indicator (9, Heiken ashi trend biased price, 1, 20) is colored green (when m-trend is bullish) and orange (when m-trend is bearish). the main indicator (20000, 10, 8, 0, 0, 0, 1) is always colored blue<sup>1</sup>.

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<sup>1</sup> namely, StepMA Mid; StepMA Min and StepMa Max are don't used. Also I don't need AdvanceMax, AdvanceMid and AdvanceMin. So you can fully delete them

# Opening the trades

2.1 **CIOM** is “Crossing Indicators trades Opening Mechanism”.

2.2 On the picture below you can see a screenshot of opening a bullish w-trade. the signal indicator crosses the main indicator from down to bottom.



**2.3** How do we open a trade exactly? By limit order or by market order (**IW** must contain a dropdown button with two elements. The name of the button is "Method of opening p-trades in CIOM", the names of dropdown elements are "CIOM: Limit orders" and "CIOM: Market orders").

### 2.3.1 Situation "CIOM: Limit orders".

Let's imagine we open a bullish w-trade. When the signal indicator has just crossed the main indicator (candle must be closed, i.e. not in progress) from down to bottom, we have to place an order of 100% of **V** at the bid which is **CIOM\_OLO** ("Offset limit order in CIOM") pips lower than the current highest bid. For example, at 10:20:30 the signal indicator crosses the main indicator from down to bottom. Candle at 10:20:30 is closed, current ask is 2,6789 and current bid is 2,6788. If **CIOM\_OLO**=2 pips we have to put a limit order at the next candle (10:20:31) at 2,6788 - 0,0002 = 2,6786 price level. What's next? We wait till our order executes. How long do we wait? We have to define it in **IW** (let's call it "**Waiting Period for limit orders in CIOM**"; you have to create a space in **IW** where I can set the used time interval in seconds – for example, it can be 1, 2, 3 etc. seconds; define this parameter as **CIOM\_WPLO**).

10:20:30 has just ended		
Price	Order book	
2,6793		75
2,6792		678
2,6791		56
2,6790		334
2,6789		115
2,6788	44	
2,6787	89	
2,6786	47	
2,6785	165	
2,6784	124	

The signal indicator has just crossed the main indicator from down to bottom at 10:20:30. We are ready to open a bullish w-trade at the beginning of the next (10:20:31) candle

10:20:31 (the first second of 1st CIOM_WPLO) has just ended		
Price	Order book	
2,6793		75
2,6792		678
2,6791		56
2,6790		334
2,6789		115
2,6788	44	
2,6787	89	
<b>2,6786</b>	<b>247 (47 others plus 200 ours)</b>	
2,6785	165	
2,6784	124	

We are placing an order of 100% of **V** (let's **V**=200 lots) at the current highest bid minus **CIOM\_OLO** = 2 pips. This is 2,6786 price level. Also now **CIOM\_WPLO** is starting. Let's define **CIOM\_WPLO** = 3 seconds (it means we wait for 3 seconds – 10:20:31, 10:20:32 and 10:20:33 – until all 100% of **V** are opened).

### 2.3.1.1 Volume is fully satisfied during 1st CIOM\_WPLO.

In the best scenario our order will be fully fulfilled during 1st CIOM\_WPLO seconds (it means that 100% of V was bought).

10:20:32 (the second second of 1st CIOM_WPLO) has just ended		
Price	Order book	
2,6793		75
2,6792		678
2,6791		56
2,6790		334
2,6789		115
2,6788		65
2,6787		8
<b>2,6786</b>	<b>47 (47 others)</b>	
2,6785	98	
2,6784	124	

The sellers are active. All our 200 lots were executed at 2,6786 during the first CIOM\_WPLO = 3 seconds.

### 2.3.1.2 Volume is not fully satisfied during 1st CIOM\_WPLO

The less favorable scenario is when our order is not fulfilled during 1st CIOM\_WPLO seconds (it means that less than 100% of V was bought or nothing was executed at all). Then **we have to cancel the limit order and make a new one to buy the rest or (again) 100% of V.**

For example, none of V were executed during the 1st CIOM\_WPLO. Then we fully cancel our order (cancel 100% of V). Then (at the beginning of the 2nd CIOM\_WPLO) we put a new one order (again 100% of V) at the current bid minus CIOM\_OLO pips. And we see next that (for example) only 35% of V was bought during the 2nd CIOM\_WPLO. Then we cancel 65% of V and again put a new order – now we need to buy only 65% of V during the 3rd CIOM\_WPLO. Luckily 65% of V were fulfilled during the 3rd CIOM\_WPLO.

10:20:32 (the second second of 1st CIOM_WPLO) has just ended		
Price	Order book	
2,6793		75
2,6792		678
2,6791		56
2,6790		334
2,6789	25	
2,6788	44	
2,6787	89	
<b>2,6786</b>	<b>247 (47 others plus 200 ours)</b>	
2,6785	165	
2,6784	124	

The price is rising (115 lots at 2,6789 were bought), new bids (25 lots) were placed at 2,6789. Our order becomes further (to be executed) than it was.

10:20:33 (the third second of 1st CIOM_WPLO) has just ended		
Price	Order book	
2,6793		75
2,6792		678
2,6791		56
2,6790		34
2,6789	55	
2,6788	44	
2,6787	89	
<b>2,6786</b>	<b>247 (47 others plus 200 ours)</b>	
2,6785	165	
2,6784	124	

The price is going up further (300 lots at 2,6790 were bought), more new bids (30 lots) were placed at 2,6789. Our order is still not completed.

10:20:34 (the first second of the 2nd CIOM_WPLO) has just ended		
Price	Order book	
2,6793		75
2,6792		678
2,6791		56
2,6790		34
2,6789	55	
2,6788	44	
<b>2,6787</b>	<b>289 (89 others plus 200 ours)</b>	
2,6786	47	
2,6785	165	
2,6784	124	

The first CIOM\_WPLO is over. We have to cancel an order (200 lots at 2,6786), then make a new order (again 200 lots) at 2,6787 price level (the current highest bid (2,6789) minus CIOM\_OLO = 2 pips).

10:20:35 (the second second of the 2nd CIOM_WPLO) has just ended		
Price	Order book	
2,6793		75
2,6792		678
2,6791		56
2,6790		34
2,6789		129
2,6788		78
<b>2,6787</b>	<b>219 (89 others plus 130 ours)</b>	
2,6786	98	
2,6785	165	
2,6784	124	

The price is going down, but only 35% (70 of our 200) lots were executed at 2,6787. 65% (130 of our 200) lots are still not executed.

10:20:36 (the third second of the 2nd CIOM_WPLO) has just ended		
Price	Order book	
2,6793		75
2,6792		678
2,6791		56
2,6790		34
2,6789		129
2,6788		78
<b>2,6787</b>	<b>219 (89 others plus 130 ours)</b>	
2,6786	98	
2,6785	165	
2,6784	124	

Nothing changes during this second.

10:20:37 (the first second of the 3rd CIOM_WPLO) has just ended		
Price	Order book	
2,6793		75
2,6792		678
2,6791		56
2,6790		34
2,6789		129
2,6788		78
<b>2,6787</b>	<b>89 (89 others)</b>	
2,6786	98	
2,6785	165	
2,6784	124	

Sellers are active again. The rest of our volume (130 lots) was executed at 2,6787.

Thus, as you see above, the whole process of opening limit orders can last pretty long (several CIOM\_WPLO) till all 100% of V is fulfilled.

### 2.3.2 Situation "CIOM: Market orders".

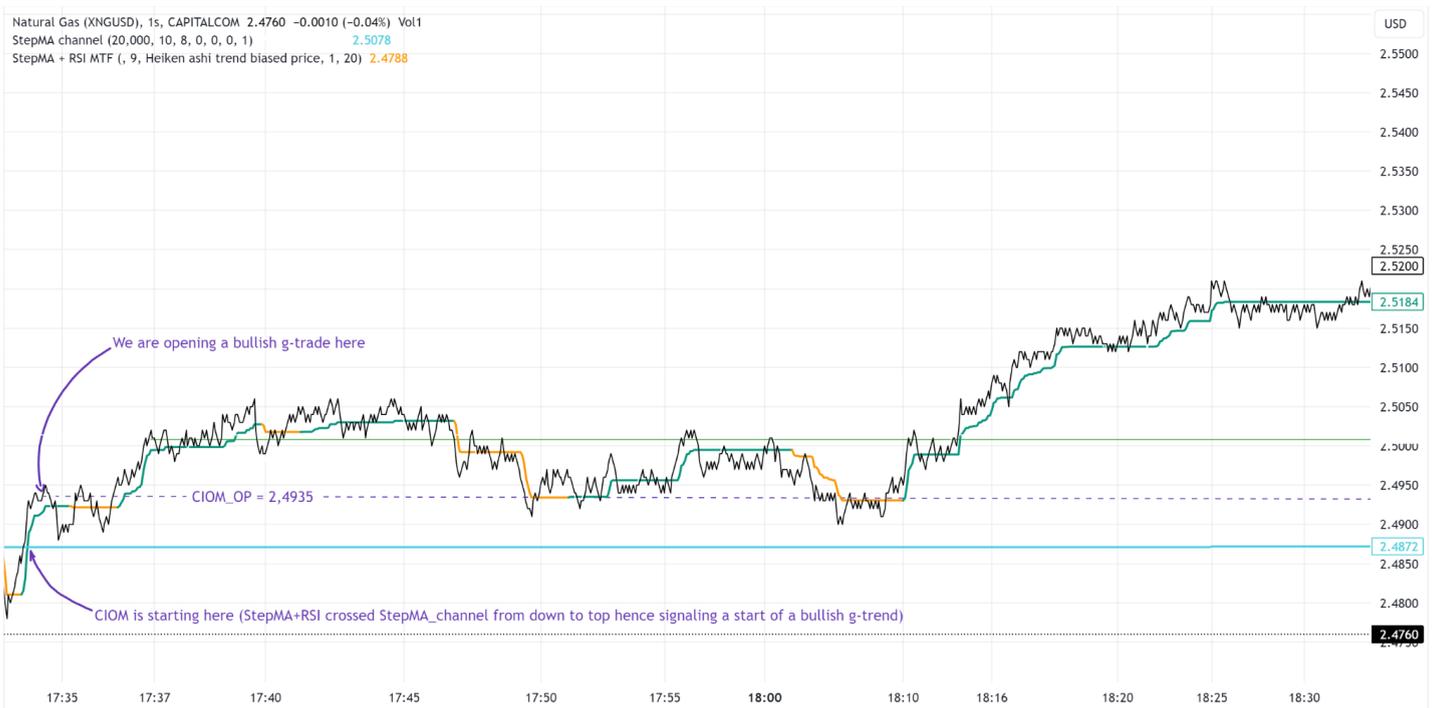
This situation is pretty easy and is supposed to be used for the financial instruments with low commission fees for market orders (or when commission for market and limit orders is the same).

Again let's imagine we open a bullish trade. When the signal indicator crosses the main indicator from bottom to top, just place a market buying order of 100% of  $V$ .

**2.4** After opening all 100% of  $V$  (doesn't matter by using limit or market order) we have to set a variable – average weighted price of opening (define this variable as  $CIOM\_OP$ , which means CIOM opening price). Display the value of  $CIOM\_OP$  in the  $OW$ .

## CIOM example

As an example, you can see on the screen below how a bullish w-trade on natural gas futures was opened (CIOM\_OP equals 2,4935 USD; assume that we use "CIOM:Limit orders" where CIOM\_WPLO = 3 seconds and CIOM\_OLO = 2 pips). All information on the screen you need for CIOM is colored purple.



## 2. Closing the trades

How do we close trade? As I wrote before we close the trades gradually by using three mechanisms: the first is “Target Margins trades Closing Mechanism” (TMCM), the second is “Signal Indicator trades Closing Mechanism” (SICM), and the third is “Crossing Indicators trades Closing Mechanism” (CICM).

### 3.1 TMCM

3.1.1 In **TMCM** (“Target Margins trades Closing Mechanism”) we use only limit orders.

3.1.2 This mechanism is something like our guarantee – we set several fixed take profit margins that we are waiting to close almost immediately after opening. Doesn't matter how long (how profitable) will the w-trade last afterwards (because the next two mechanisms – **SICM** and **CICM** – don't suggest known in advance fixed margins).

3.1.3 In **TMCM** we set in advance 5 margins (as % of **CIOM\_OP**) and 5 volume levels (as % of **V**) we would like to close.

3.1.4 In **IW** we have to define TMCM target margins and volume levels. Let's call them **TMCM\_M1** and **TMCM\_V1** for the first margin and first volume ... **TMCM\_M5** and **TMCM\_V5** for the fifth margin and fifth volume.

3.1.5 Target prices for TMCM levels will be indicated as **TMCM\_P1**, **TMCM\_P2** ... till **TMCM\_P5**.

The following five formulas are applied for a bullish w-trade:

$$\begin{aligned} \text{TMCM\_P1} &= \text{CIOM\_OP} * (100\% + \text{TMCM\_M1}) \dots \text{till} \\ \text{TMCM\_P5} &= \text{CIOM\_OP} * (100\% + \text{TMCM\_M5}) \end{aligned}$$

And next for a bearish:

$$\begin{aligned} \text{TMCM\_P1} &= \text{CIOM\_OP} * (100\% - \text{TMCM\_M1}) \dots \text{till} \\ \text{TMCM\_P5} &= \text{CIOM\_OP} * (100\% - \text{TMCM\_M5}) \end{aligned}$$

NOTE: all margins are set in **IW** must always be positive (even for a bearish w-trade)!

3.1.6 Next table must be included in **IW**.

TMCM level	Target margin (as % of CIOM_OP)	Volume (as % of V)
1		
2		
3		
4		
5		

3.1.7 The best scenario is when all 5 margins and volume for **TMCM** are achieved, and we can continue to **SICM**. But if only were closed some of 5 TMCM margins or a part of one TMCM margin (doesn't matter which one exactly), then we automatically continue to **CICM**, where we have to close the rest (what was not closed in **TMCM**) volume (of course, the volume intended for **CICM** must be closed as well).

Define total planning volume we have to close in the **TMCM** as **TMCM\_PV**, total actual volume we closed as **TMCM\_AV** (it equals to sum of **TMCM\_AV1**, **TMCM\_AV2**...**TMCM\_AV5** depends on how many lots were closed), the remaining volume we will close in **CICM** as **TMCM\_RV**; then next formulas are applied:

$$\text{TMCM\_PV} = \text{TMCM\_AV} + \text{TMCM\_RV}$$

$$\text{TMCM\_AV} = \text{TMCM\_AV1} + \text{TMCM\_AV2} + \dots + \text{TMCM\_AV5} \text{ (depends on how many lots were closed)}$$

**3.1.8** When **TMCM** is finished (doesn't matter if it was realized fully or partly) we define the average weighted closing price (calculate **TMCM\_CP**). Also we calculate **TMCM\_PROFIT**. Use the next formula:

$$\mathbf{TMCM\_PROFIT = (TMCM\_CP - CIOM\_OP) * TMCM\_AV * LS}$$

**If no one lot was opened in TMCM, then TMCM\_PROFIT = 0.**

**3.1.9** Display the value of **TMCM\_AV**, **TMCM\_CP**, **TMCM\_PROFIT** in **OW**.

## TMCM example

Let's continue with our example, where **CIOM\_OP** = 2,4935 USD and **V** = 200 lots. Assume that the TMCM target margins and volumes are as follows:

TMCM level	Target margin (as % of CIOM_OP)	Volume (as % of V)
1	0,15%	8%
2	0,30%	7%
3	0,45%	7%
4	0,60%	7%
5	0,75%	6%

Then target price for the first TMCM level (**TMCM\_P1**) equals  $2,4935 * (100\% + 0,15\%) = 2,4972$  USD<sup>2</sup> and volume (**TMCM\_AV1**) equals  $8\% * 200 = 16$  lots<sup>3</sup>, target price for the second TMCM level (**TMCM\_P2**) equals  $2,4935 * (100\% + 0,30\%) = 2,5010$  USD and volume (**TMCM\_AV2**) equals  $7\% * 200 = 14$  lots, etc...

The screenshot below shows **CIOM\_OP** and (at this given example) all five TMCM levels that were fully executed (the places where profit p-trades were closed are shown as green digits 1, 2, 3, 4, and 5). All information you need for **TMCM** is colored **green**.



In the example above all TMCM levels were fully executed. Hence:

$$\text{TMCM\_CP} = (2,4972 * 0,08 + 2,5010 * 0,07 + 2,5047 * 0,07 + 2,5085 * 0,07 + 2,5122 * 0,06) / (0,08 + 0,07 + 0,07 + 0,07 + 0,06) = 2,5043 \text{ USD}$$

$$\text{TMCM\_AV} = \text{TMCM\_PV} = (0,08 + 0,07 + 0,07 + 0,07 + 0,06) * 200 = 70 \text{ lots}; \text{TMCM\_RV} = 70 - 70 = 0$$

$$\text{TMCM\_PROFIT} = (2,5043 - 2,4935) * 70 * 100 = 75,60 \text{ USD}$$

<sup>2</sup> we round target price (!) to 4 digits after the decimal point, because **DDP** for the given instrument (natural gas futures) equals 4

<sup>3</sup> all volumes (everywhere at the strategy) must be rounded up to the nearest whole number (!)

## 3.2 SICM

**3.2.1 "Signal indicator trades closing mechanism" (SICM)** can be used only after all 5 TMCM levels were fully executed.

**3.2.2** The main idea of SICM is that we follow the signal indicator indicator. As I wrote before, TMCM is for trades that are closed by the fixed margins and volume levels which are defined in advance. SICM assumes that our trades are closed when the signal indicator turns back (signaling that m-trend has just finished).

In SICM we evaluate the behavior of the signal indicator indicator only after all 5 TMCM levels were fully executed. Doesn't matter the behavior of the signal indicator indicator during TMCM.

**3.2.3** Let's imagine we open a bullish w-trade. We don't take care of the signal indicator indicator during TMCM, but after all TMCM levels are reached, we have to follow the signal indicator indicator. Once the signal indicator indicator turns back (becomes bearish), it is necessary to check how far has the price moved (from CIOM\_OP) and depending on this difference we close the p-trades by a certain % of V.

**3.2.4** The first SICM p-trade can be closed on any SICM level – the further the price moves without changing the direction of the signal indicator the higher SISM level will be achieved.

**3.2.5** After the first SICM p-trade has been closed (on any SICM level), we check the behavior of the the signal indicator indicator again: when the direction of the the signal indicator indicator will be the same as a direction of the w-trade, we wait till the the signal indicator indicator turns back with a purpose of closing the second SICM p-trade on the higher (contrary to first SICM p-trade) SICM level. This process can last further – it means that hypothetically there can be third, fourth... seventh SICM p-trades.

The movement from upper to lower SICM level is impossible (i.e. we don't close p-tardes when the potential closing price is getting worse, even though a behavior of the signal indicator indicator suggests closing conditions in SICM stage...but, of course, when the price becomes so bad that the w-trade changes, then we apply CICM approach).

**3.2.6** Only one p-trade can be closed on any SICM level! It means that we exclude closing p-trades too often, even though the signal indicator changes in such a way that we are needed to close p-trades.

**3.2.7** This content must be in IW (we have to fulfill an array from SICM\_LL1 to SICM\_LL7; from SICM\_V1 to SICM\_V7). Here LL means lower limits (in fact they are like margins in TMCM, see part 3.2.8 for more details).

SICM level	Lower limit (as % of CIOM_OP)	Volume (as % ov V)
1		
2		
3		
4		
5		
6		
7		

NOTE: all lower limits are set in IW must always be positive (even for a bearish w-trade)!

NOTE:  $TMCM\_M5 < SICM\_LL1 < SICM\_LL2 < SICM\_LL3 < SICM\_LL4 < SICM\_LL5$

### 3.2.8 The tables below represent the conditions, price levels, volume for SICM p-trades:

SICM level	Necessary conditions for given SICM level (for a <b>bullish w-trade</b> )	Price at which p-trade will be closed	Volume (as % of V)
1	$(100\% + \text{SICM\_LL2}) * \text{CIOM\_OP} > \text{SICM\_CP1} \geq (100\% + \text{SICM\_LL1}) * \text{CIOM\_OP}$	SICM_CP1	SICM_V1
2	$(100\% + \text{SICM\_LL3}) * \text{CIOM\_OP} > \text{SICM\_CP2} \geq (100\% + \text{SICM\_LL2}) * \text{CIOM\_OP}$	SICM_CP2	SICM_V2
3	$(100\% + \text{SICM\_LL4}) * \text{CIOM\_OP} > \text{SICM\_CP3} \geq (100\% + \text{SICM\_LL3}) * \text{CIOM\_OP}$	SICM_CP3	SICM_V3
4	$(100\% + \text{SICM\_LL5}) * \text{CIOM\_OP} > \text{SICM\_CP4} \geq (100\% + \text{SICM\_LL4}) * \text{CIOM\_OP}$	SICM_CP4	SICM_V4
5	$(100\% + \text{SICM\_LL6}) * \text{CIOM\_OP} > \text{SICM\_CP5} \geq (100\% + \text{SICM\_LL5}) * \text{CIOM\_OP}$	SICM_CP5	SICM_V5
6	$(100\% + \text{SICM\_LL7}) * \text{CIOM\_OP} > \text{SICM\_CP6} \geq (100\% + \text{SICM\_LL6}) * \text{CIOM\_OP}$	SICM_CP6	SICM_V6
7	$\text{SICM\_CP7} \geq (100\% + \text{SICM\_LL7}) * \text{CIOM\_OP}$	SICM_CP7	SICM_V7

SICM level	Necessary conditions for given SICM level (for a <b>bearish w-trade</b> )	Price at which p-trade will be closed	Volume (as % of V)
1	$(100\% - \text{SICM\_LL2}) * \text{CIOM\_OP} < \text{SICM\_CP1} \leq (100\% - \text{SICM\_LL1}) * \text{CIOM\_OP}$	SICM_CP1	SICM_V1
2	$(100\% - \text{SICM\_LL3}) * \text{CIOM\_OP} < \text{SICM\_CP1} \leq (100\% - \text{SICM\_LL2}) * \text{CIOM\_OP}$	SICM_CP2	SICM_V2
3	$(100\% - \text{SICM\_LL4}) * \text{CIOM\_OP} < \text{SICM\_CP1} \leq (100\% - \text{SICM\_LL3}) * \text{CIOM\_OP}$	SICM_CP3	SICM_V3
4	$(100\% - \text{SICM\_LL5}) * \text{CIOM\_OP} < \text{SICM\_CP1} \leq (100\% - \text{SICM\_LL4}) * \text{CIOM\_OP}$	SICM_CP4	SICM_V4
5	$(100\% - \text{SICM\_LL6}) * \text{CIOM\_OP} < \text{SICM\_CP1} \leq (100\% - \text{SICM\_LL5}) * \text{CIOM\_OP}$	SICM_CP5	SICM_V5
6	$(100\% - \text{SICM\_LL7}) * \text{CIOM\_OP} < \text{SICM\_CP1} \leq (100\% - \text{SICM\_LL6}) * \text{CIOM\_OP}$	SICM_CP6	SICM_V6
7	$\text{SICM\_CP7} \leq (100\% - \text{SICM\_LL7}) * \text{CIOM\_OP}$	SICM_CP7	SICM_V7

**3.2.9** In **SICM** (contrary to **TMCM**) we can't forecast in advance the best scenario for us. Let me explain why. Assume a w-trade is bullish. If the trend is not strong but it has several bearish p-trends, then applying **SICM** is a good idea (we will fix profits before the w-trade becomes bearish). On the other hand, if the w-trade is very strong without bearish p-trends, then **SICM** is not so good for us (we will fix smaller profits while w-trade continues to be bullish).

**3.2.10** Closing a part of SICM level (doesn't matter which one exactly) may only happen if the signal indicator crosses the main indicator – it means we are (automatically) in the last closing stage (**CICM**). But don't forget to close the rest (which was not closed in **SICM**) volume in **CICM** (of course, the volume intended for **CICM** must be closed as well). Define the actual volume is closed in **SICM** as **SICM\_AV**, the remaining volume we have to close in **CICM** as **SICM\_RV**.

$$\text{SICM\_AV} = \text{SICM\_AV1} + \text{SICM\_AV2} + \dots + \text{SICM\_AV5}$$

(depends on how many lots on which SICM level were closed)

**3.2.11** How do we close trades in **SICM** (by market or limit orders)? Technology is the same as used in "CIOM: Limit orders" and "CIOM: Market orders". It means in **SICM** we can use either limit orders or market orders. **IW** must contain a dropdown button with two elements. Name of the button is "Method of opening p-trades in SICM", the names of dropdown elements are "SICM: Limit orders" and "SICM: Market orders". The principles of functioning are the same as used in "CIOM: Limit orders"<sup>4</sup> and "CIOM: Market orders".

<sup>4</sup> in "SICM: Limit orders" we also define **SICM\_WPLO** (in seconds) and **SICM\_OLO** (in pips). Their operating principle is similar to **CIOM\_WPLO** and **CIOM\_OLO**.

**3.2.12** When **SICM** is finished (doesn't matter if it was realized fully or partly) we have to define the average weighted closing price for **SICM** (calculate **SICM\_CP**). Also calculate **SICM\_PROFIT**. Display the value of **SICM\_AV**, **SICM\_CP** and **SICM\_PROFIT** in **OW**.

$$\mathbf{SICM\_PROFIT = (SICM\_CP - CIOM\_OP) * SICM\_AV * LS}$$

**If no one lot was opened in SICM then SICM\_PROFIT = 0.**

### SICM example

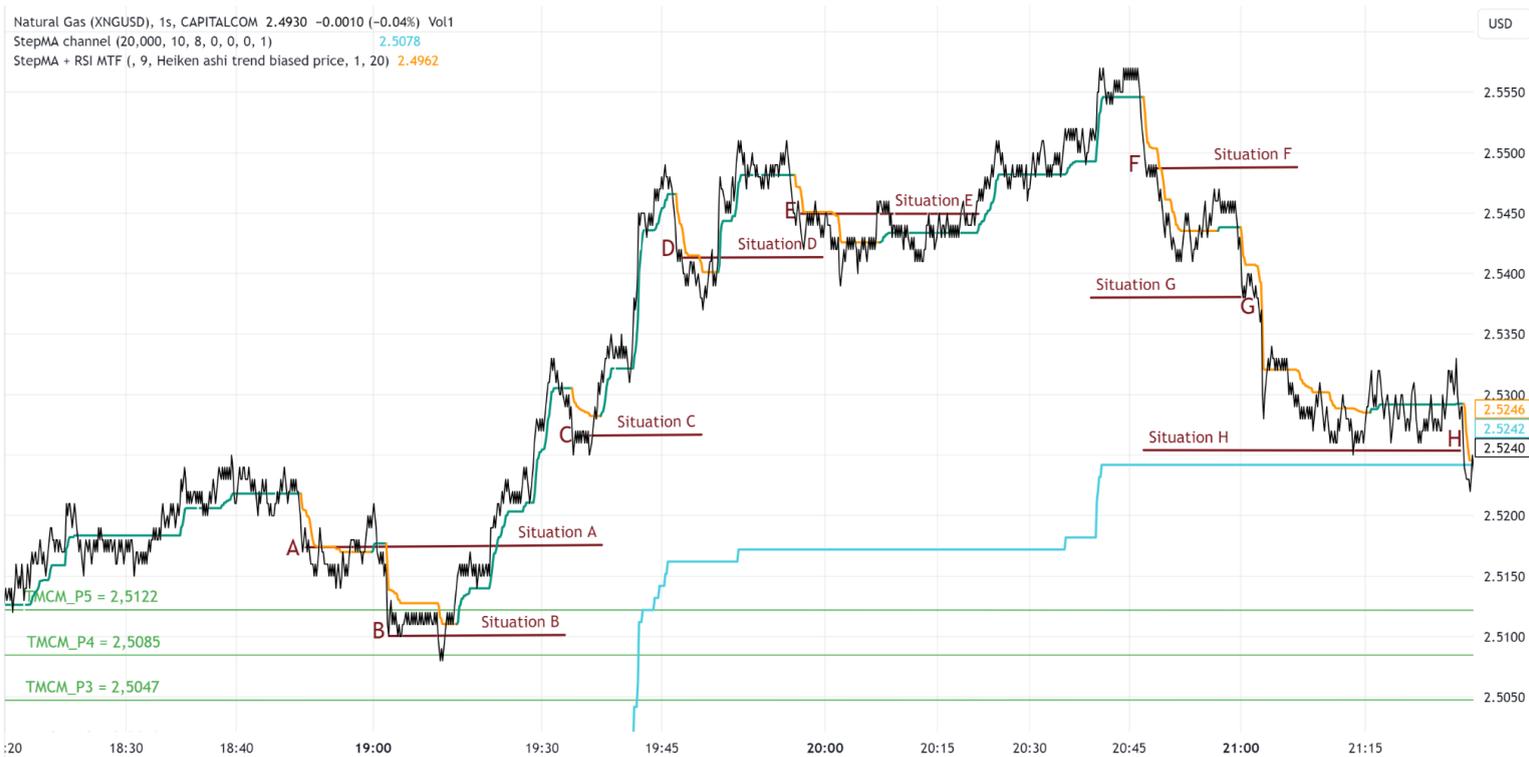
Let's continue with our example. Assume that we use "SICM:Limit orders" where **SICM\_WPLO** = 3S and **SICM\_OLO** = 2 pips, also we suggest that the lower limits and volumes for **SICM** are as follows:

SICM level	Lower limit (as % of CIOM_OP)	Volume (as % ov V)
1	1,00%	6%
2	1,25%	6%
3	1,50%	5%
4	1,75%	5%
5	2,00%	5%
6	2,25%	4%
7	2,50%	4%

It means that next conditions for SICM levels must be satisfied:

SICM level	Necessary conditions for given SICM level (for a <b>bullish w-trade</b> )
1	2,5247 > SICM_CP1 >= 2,5184
2	2,5309 > SICM_CP2 >= 2,5247
3	2,5371 > SICM_CP3 >= 2,5309
4	2,5434 > SICM_CP4 >= 2,5371
5	2,5496 > SICM_CP5 >= 2,5434
6	2,5558 > SICM_CP6 >= 2,5496
7	SICM_CP7 >= 2,5558

All information you need for **SICM** is colored **brown** on the screenshot below (look at the capital letters A,B,C...H).



**Situation A:** It's the first time when the signal indicator turns back after all 5 TMCM levels were fully executed, so we may potentially close the p-trade. But the price is 2,5174 USD here, the potential condition for SICM level 1 ( $2,5247 > \text{SICM\_CP1} \geq 2,5184$ ) is not satisfied, so we can't close the p-trade. Just do nothing here.

**Situation B:** It's the second time when the signal indicator turns back (becomes bearish again), so we may potentially close the p-trade. The price is 2,5100 USD – it's less than **TMCM\_M5** (see 3.2.7), so we can't close the p-trade. Just do nothing here.

**Situation C:** It's the third time when the signal indicator turns back (becomes bearish again), so we may potentially close the p-trade. The price is 2,5266 USD, the condition for SICM level 2 ( $2,5309 > \text{SICM\_CP2} \geq 2,5247$ ) is satisfied, so we set an order to close 12 lots (because **SICM\_V2** = 6%) at **SICM\_CP2** = 2,5266 USD. Assume that all 12 lots were closed (**SICM\_AV2** = 12 lots).

**Situation D:** It's the fourth time when the signal indicator turns back (becomes bearish again), so we may potentially close the p-trade. The price is 2,5413 USD, the condition for SICM level 4 ( $2,5434 > \text{SICM\_CP4} \geq 2,5371$ ) is satisfied, so we set an order to close 10 lots (because **SICM\_V4** = 5%) at **SICM\_CP4** = 2,5413 USD. Assume that all 10 lots were closed.

**Situation E:** It's the fifth time when the signal indicator turns back (becomes bearish again), so we may potentially close the p-trade. The price is 2,5450 USD here, the condition for SICM level 5 ( $2,5496 > \text{SICM\_CP5} \geq 2,5434$ ) is satisfied, so we set an order to close 10 lots (because **SICM\_V5** = 5%) at **SICM\_CP5** = 2,5450 USD. Assume that only half of them were closed (hence, **SICM\_RV** =  $0,5 \cdot \text{SICM\_V5} = 0,5 \cdot 5\% = 2,5\%$  or 5 lots).

**Situation F:** It's the sixth time when the signal indicator turns back (becomes bearish again), so we may potentially close the p-trade. The price is 2,5488 USD here, the condition for SICM level 5 ( $2,5496 > \text{SICM\_CP5} \geq 2,5434$ ) is satisfied, but the p-trade was already closed at SICM level 5 (we know from 3.2.6 that only one p-trade can be closed on any SICM level), so we can't close p-trade. Just do nothing here.

**Situation G:** It's the seventh time when the signal indicator turns back (becomes bearish again), so we may potentially close the p-trade. The price is 2,5382 USD here, the condition for SICM level 4 ( $2,5434 > \text{SICM\_CP4} \geq 2,5371$ ) is satisfied, but the movement from the upper (namely, 5th) to lower (4th) SICM level is impossible (see 3.2.5), so we can't close p-trade. Just do nothing here.

**Situation H:** It's the eighth time when the signal indicator turns back (becomes bearish again), so we may potentially close the p-trade. The price is 2,5217 USD here, the condition for SICM level 1 ( $2,5247 > \text{SICM\_CP1} \geq 2,5184$ ) is satisfied, but the movement from upper (namely, 5th) to lower (1th) SICM level is impossible (see 3.2.5), so we can't close p-trade. Just do nothing here.

Let's now calculate  $\text{SICM\_CP}$ ,  $\text{SICM\_AV}$  and  $\text{SICM\_PROFIT}$ :

$$\text{SICM\_CP} = (2,5266 \cdot 0,06 + 2,5413 \cdot 0,05 + 2,5450 \cdot 0,05/2) / (0,06 + 0,05 + 0,025) = 2,5355 \text{ USD};$$

$$\text{SICM\_AV} = 12 + 10 + 5 = 27 \text{ lots};$$

$$\text{SICM\_PROFIT} = (2,5355 - 2,4935) \cdot 27 \cdot 100 = 113,40 \text{ USD}.$$

### 3.3 CICM

**3.3.1** CICM is “Crossing Indicators trades Closing Mechanism”.

**3.3.2** The bullish w-trade is finished when the signal indicator crosses the main indicator from top to bottom. And now it's time for CICM – the final (third) step to close the all opening p-trades.

All trades that were not closed in the former two steps (during TMCM and SICM) must be closed here.

We can calculate the actual volume we have to close in CICM (call it CICM\_AV) as follows:

$$\text{CICM\_AV} = V - \text{TMCM\_AV} - \text{SICM\_AV}$$

**3.3.3** How do we close trades in CICM (by market or limit orders)? Technology is the same as used in “CIOM: Limit orders” and “CIOM: Market orders” (or “SICM: Limit orders” and “SICM: Market orders”). It means in CICM we can use either limit orders or market orders. IW must contain a dropdown button with two elements. Name of the button is "P-trades closing method for CICM", the names of dropdown elements are "CICM: Limit orders" and "CICM: Market orders". The principles of functioning here are the same as used in “CIOM: Limit orders” and “CIOM: Market orders” (or “SICM: Limit orders” and “SICM: Market orders”).

In case we choose “CIOM: Limit orders”, of course, there can be a situation when orders can be closed too late. For this reason we set the parameters CICM\_WPLO (in seconds) and CICM\_OLO (in pips). Their operating principle is similar to CIOM\_WPLO and CIOM\_OLO, as well as SICM\_WPLO and SICM\_OLO. But CICM\_WPLO can last only once (in contrast to CIOM\_WPLO or SICM\_WPLO). So when the CICM\_WPLO is finished, we have to close the rest by the market order immediately!

**3.3.4** Check whether all opening p-trades in w-trade were closed after all three closing mechanisms (TMCM, SICM, CICM). The given information must be displayed in OW as a row with a text “All 100% of opening volume was closed properly” with a small window for check mark (“yes”/“no”).

**3.3.5** When CICM is finished we have to define the average weighted Closing Price for CICM (calculate CICM\_CP). Also calculate profit for CICM. Use formula

$$\text{CICM\_PROFIT} = (\text{CICM\_CP} - \text{CIOM\_OP}) * \text{CICM\_AV} * \text{LS}$$

**3.3.6** Calculate total profit of the w-trade as follows:

$$\text{TOTAL\_PROFIT} = \text{TMCM\_PROFIT} + \text{SICM\_PROFIT} + \text{CICM\_PROFIT}$$

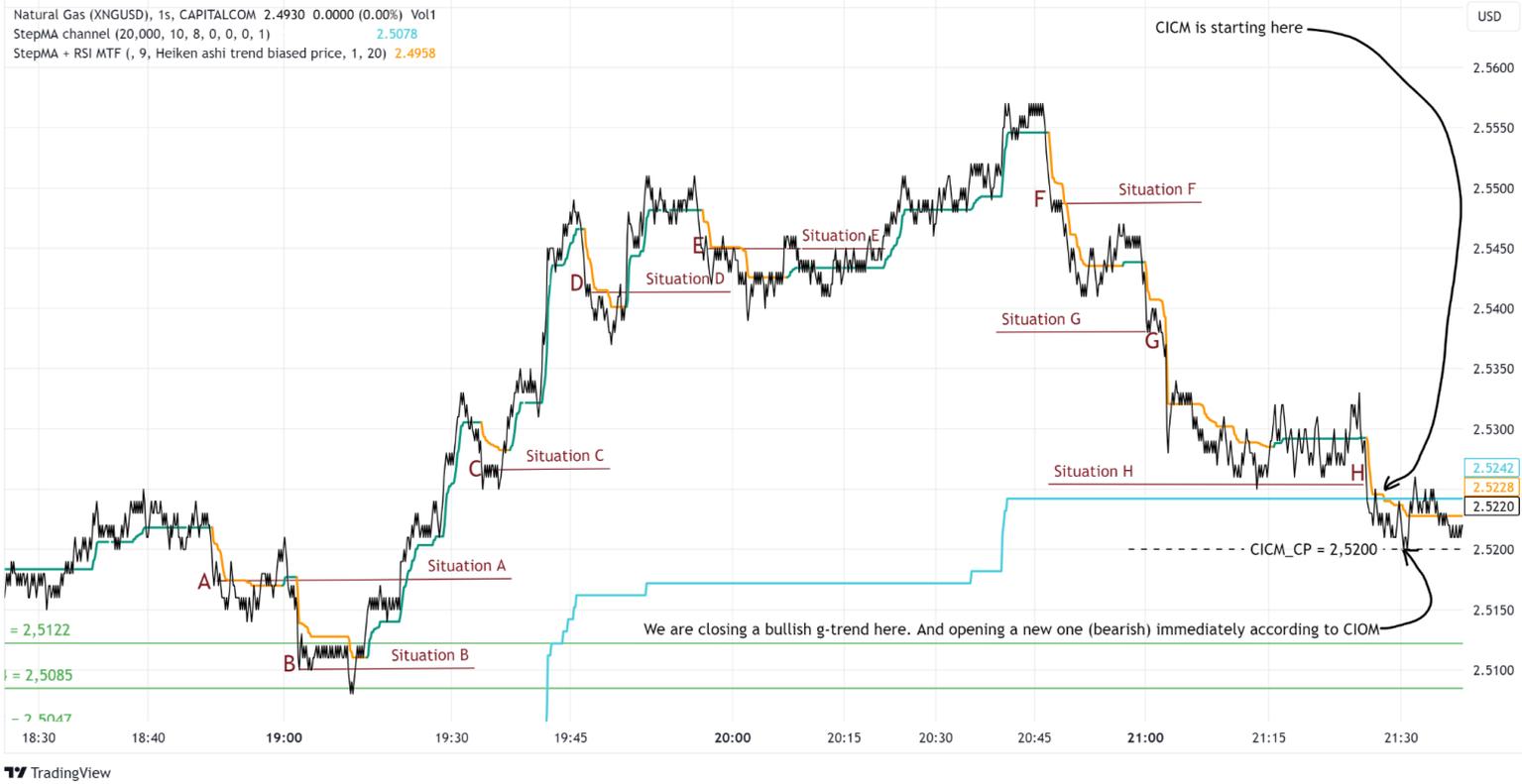
**3.3.7** Display the value of CICM\_AV, CICM\_CP, CICM\_PROFIT, TOTAL\_PROFIT in OW.

**3.3.8 NOTE:** Closing of bullish w-trade in CICM also means that the bearish position must be opened right away the bullish position is closed according to CICM. Trading a new (bearish) w-trade is realizing according to CIOM. Thus, a new (bearish) trend is beginning. The cycle (CIOM, TMCM, SICM, CICM) is repeated again.

## CICM example

Assume that in our example we use "CICM:Limit orders" where **CICM\_WPLO** = 10S and **CICM\_OLO** = 2 pips.

All information you need for **CICM** is colored black on the screenshot below.



The bullish w-trade was finished because the signal indicator crossed the main indicator from top to bottom.

**CICM\_CP** was 2,5200 USD.

**CICM\_AV** = 200 - 70 - 27 = 103 lots (all lots were executed by limit order during **CICM\_WPLO** = 10S).

**CICM\_PROFIT** = (2,5200 - 2,4935) \* 103 \* 100 = 272,95 USD

Thus, **TOTAL\_PROFIT** of w-trade equal 75,60 + 113,40 + 272,95 = 461,95 USD

## Appendix: Input Data Window (IW) example

<b>Timeframe (S/M/H/D)</b>	1S	
<b>Volume (lots)</b>	200	
<b>LS (units in 1 lot)</b>	100	
<b>Signal indicator</b>		
RSI length	9	
RSI price	Heiken ashi trend biased price	
Sensitivity factor	1	
Constatnt Step Size	20	
<b>Main indicator</b>		
Bars back	20000	
PeriodWATR	10	
Kwatr	8	
HighLow	1	
<b>CIOM</b>		
Method of opening p-trades in CIOM	CIOM: Limit orders	
CIOM_WPLO (seconds)	3	
CIOM_OLO (pips)	2	
<b>TMCM level</b>		
<b>TMCM level</b>	Target margin (as % of CIOM_OP)	Volume (as % of V)
1	0,15%	8%
2	0,30%	7%
3	0,45%	7%
4	0,60%	7%
5	0,75%	6%
<b>SICM</b>		
Method of opening p-trades in SICM	SICM: Limit orders	
SICM_WPLO (seconds)	3	
SICM_OLO (pips)	2	
<b>SICM level</b>		
<b>SICM level</b>	Lower limit (as % of CIOM_OP)	Volume (as % ov V)
1	1,00%	6%
2	1,25%	6%
3	1,50%	5%
4	1,75%	5%
5	2,00%	5%
6	2,25%	4%
7	2,50%	4%
<b>CICM</b>		
Method of opening p-trades in CICM	CICM: Limit orders	
CICM_WPLO (seconds)	10	
CICM__OLO (pips)	2	

## Appendix: Output Data Window (OW) example

CIOM_OP	2,4935
TMCM_CP	2,5043
TMCM_AV	70
TMCM_PROFIT	75,60
SICM_CP	2,5355
SICM_AV	27
SICM_PROFIT	113,40
CICM_CP	2,5200
CICM_V	103
CICM_PROFIT	272,95
All 100% of opening volume was closed properly	Yes
TOTAL_PROFIT	461,95