

Index Guide for 12X Short Index linked to MDAX® V3

ISIN CH0429834093

This Index Guide describes the composition and calculation of the *Factor Index* specified below. The *Index Calculation Agent* makes the *Index Guide* available on the *Information Page*. The *Index Guide* constitutes the basis for calculating and publishing the *Factor Index*.

Index Name:	12X Short Index linked to MDAX® V3 (the " Factor Index ")
Reference Instrument	MDAX®
Index Calculation Agent:	Bank Vontobel AG, Gotthardstrasse 43, 8002 Zürich, Switzerland
Information Page:	https://indices.vontobel.com
Identifier:	ISIN: CH0429834093 / WKN: A2NVVH / Valor: 42983409

This Index is part of the family of Vontobel Leveraged Long and Short indices ("**Factor Indices**").

The Factor Indices are not recognized financial indices but are customized indices conceived by Bank Vontobel AG in its capacity as Index Calculation Agent, their sole function being to act as underlying for this type of security (Factor Certificates).

The Index Calculation Agent will perform the calculation and composition of the Factor Index with the utmost care. However, the Index Calculation Agent does not guarantee that the calculation of the indices or of any other parameters required for the composition and calculation, as in accordance with this Index Guide, will be free from error.

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The original version of the Index Guide is in German; foreign-language versions constitute non-binding translations.

The composition and calculation of the *Factor Index* specified above is described in the following. The *Index Calculation Agent* will make an index guide available on the *Information Page* for each *Factor Index*, containing this description together with the stipulations in the Final Terms. The index guide constitutes the basis for calculating and publishing the *Factor Index*.

A) INDEX DESCRIPTION

The *Factor Index* reflects price movements in the *Reference Instrument* with a leverage factor of 12. A decrease in the price of the *Reference Instrument* since the most recent calculation of an *Index Closing Value* results in a positive change in the *Factor Index* as compared to the previous price of the *Factor Index* and vice versa. The *Factor Index* therefore replicates a "short" strategy.

The *Factor Index* consists of a leverage component and a financing component.

Leverage component

The leverage component inversely (i.e. opposite) tracks an investment in the *Reference Instrument* (or its constituents and in accordance with its rules and regulations), whereby movements in the price of the *Reference Instrument* are multiplied by the *Leverage* (Factor). This leverage effect occurs with either positive or negative movements in the price of the *Reference Instrument*, having a disproportionate effect on the value of the *Factor Index*.

For example (leaving aside the financing component):

1. An increase in the price of the *Reference Instrument* (as compared to the most recent *Valuation Price* of the *Reference Instrument*) by 2% results in an decrease in the in the *Factor Index* by $12 \times 2\%$;
2. A decrease in the price of the *Reference Instrument* (as compared to the most recent *Valuation Price* of the *Reference Instrument*) by 2% results in a increase in the *Factor Index* by $12 \times 2\%$;

Financing component

The financing component reflects the capital costs that would be incurred in the event of a corresponding investment in the *Reference Instrument* (or its constituents), selling it and investing the proceeds at the risk-free rate. Additionally, a fee charged by the *Index Calculation Agent* for the calculation and administration of the *Factor Index* is added (*Index Fee*) which reduces the value of the index.

If the acquisition costs and the *Index Fee* exceed the interest income based on the relevant *Interest Rate* on a particular day, the value of the *Factor Index* is reduced on such day.

B) INDEX DEFINITIONS

The definitions below shall apply for the purposes of this index description.

"**Adjustment Date**" means the first *Index Calculation Day* of each calendar month.

"**Extraordinary Adjustment Event**" means any of the following events as they relate to the *Reference Instrument*:

- (a) Change, adjustment or other measure affecting the relevant concept and the calculation of the *Reference Instrument*, resulting, in the reasonable discretion of the *Index Calculation Agent*, in the relevant concept or the relevant calculation of the *Reference Instrument* no longer being comparable to those applicable on the *Index Start Date*. These factors are no longer comparable if, in particular, a change, adjustment or other measure results in a material change in the *Reference Instrument* despite the fact that the prices of the individual securities included in the *Reference Instrument* and their weightings remain the same;
- (b) Cancellation of the *Reference Instrument* and/or replacement by a different index concept; or
- (c) any other event which in the reasonable discretion of the *Index Calculation Agent* would have a comparable or similar impact on the calculation of the *Factor Index* in the event that no adjustment were to be made.

"**Valuation Price**" of the *Reference Instrument* for an *Index Calculation Day* means – subject to an *Extraordinary Adjustment* to the calculation of the index in accordance with section D) – the closing price of the *Reference Instrument*, as determined and published for that day by the *Reference Exchange*.

If an *Index Calculation Day* falls on a day which is not a *Trading Day*, the *Valuation Price* of the immediately preceding *Index Calculation Day* shall continue to apply. If no *Valuation Price* for the *Reference Instrument* is determined or published on a *Trading Day*, the *Index Calculation Agent* shall determine the *Valuation Price* of the *Reference Instrument* for that day on the basis of the most recent prices set for the *Reference Instrument* at its due discretion.

"**Financing Spread**" reflects the current annual cost on an *Index Calculation Day* of acquiring the *Reference Instrument* (or its constituents) via a securities lending and repurchase ("repo") transaction.

The *Financing Spread* on the *Index Start Date* corresponds to the *Initial Financing Spread*. The *Index Calculation Agent* then adjusts the "**Current Financing Spread**" in its due discretion on each *Adjustment Date* to reflect current market conditions and publishes it in accordance with section E) of this index description. The adjusted *Financing Spread* shall apply immediately as from the relevant *Adjustment Date*.

"**Initial Financing Spread**" means 0.50% per annum.

"**Trading Day**" means every day on which the *Reference Instrument* is calculated by the *Reference Exchange*.

"**Leverage**" means -12. It describes the impact that a change in the price of the *Reference Instrument* has on the relevant *Factor Index*. The negative sign for the *Leverage* indicates that the *Short Factor Index* participates inversely in the performance of the *Reference Instrument*.

"**Index Calculation Agent**" means Bank Vontobel AG, Gotthardstrasse 43, 8002 Zurich, Switzerland.

"**Index Calculation Day**" means every day from Monday to Friday.

"**Index Fee**" means 1.00% per annum. The *Index Fee* is charged each calendar day, beginning as of the *Index Start Date*. It is calculated on the basis of a 360-day year and the most recently calculated *Index Closing Value*.

"**Index Closing Value**" is calculated for each *Index Calculation Day* by the *Index Calculation Agent* in accordance with section C) 1) of this index description on the basis of the *Valuation Price* of the *Reference Instrument* for this *Index Calculation Day* and published in accordance with section E) of this index description.

"**Index Start Date**" means 17 April 2019.

"**Index Start Value**" means 1,000 index points and represents the *Index Closing Value* on *Index Calculation Day* T=0 for the purposes of calculating the index in accordance with C).

"**Index Currency**" means EUR.

"**Information Page**" means <https://indices.vontobel.com>.

"**Reference Instrument Price**" corresponds at any time during the calculation period of the *Reference Instrument* to the price of the *Reference Instrument*, as calculated by the *Reference Exchange* and determined by the *Index Calculation Agent*.

"**Reference Exchange**" means Deutsche Börse.

"**Reference Instrument**" means MDAX®.

Type:	Performance Index
Currency:	EUR
ISIN:	DE0008467416
Bloomberg Symbol:	MDAX Index

"**Barrier**" means 7%. It indicates the maximum permitted positive change in price of the *Reference Instrument* compared with its most recent *Valuation Price* before an *Intraday Index Adjustment* takes place.

"**Derivatives Exchange**" means Eurex.

"**Interest Rate**" means EONIA.

EONIA (Euro Over Night Index Average) is a weighted average interest rate for overnight interbank money calculated act/360 by the European Central Bank since 4 January 1999 on the basis of effective turnover.

If the Interest Rate is neither set nor published on an *Index Calculation Day*, the Interest Rate applied on the immediately preceding *Index Calculation Day* is used to calculate the Index in accordance with section C).

If the Interest Rate has neither been set nor published for ten consecutive *Index Calculation Days*, the *Index Calculation Agent* has the right and obligation to stipulate in its reasonable discretion an alternative relevant Interest Rate which has functions comparable to the previous Interest Rate.

C) INDEX CALCULATION

The *Factor Index* shall be calculated for the first time on the *Index Start Date*. The initial level of the *Index* on the *Index Start Date* corresponds to the *Index Start Value*. The respective current index level is calculated by the *Index Calculation Agent* on a continuous basis during the trading period of the *Reference Instrument* on the *Reference Exchange* on each *Index Calculation Day*, rounded to two decimal places and published in accordance with section E).

One index point corresponds to one unit of the *Index Currency*.

C) 1) Index Formula

The *Factor Index* is calculated for each time t during an *Index Calculation Day* T in accordance with the following formula:

$$IDX_t = IDX_{T-1} \cdot \left(\underbrace{1 + L \cdot \left(\frac{R_t}{R_{T-1}} - 1 \right)}_{\text{leverage component}} + \underbrace{\left[(1-L) \cdot IR_{T-1} + L \cdot FS_T - IG \right]}_{\text{financing component}} \right) \cdot \frac{d}{360}$$

where:

T:	current Index Calculation Day
IDX_t:	Index Value at time t on Index Calculation Day T
IDX_{T-1}:	Index Closing Value on Index Calculation Day T-1 which immediately precedes the current Index Calculation Day
L:	Leverage (Factor): -12
R_t:	Reference Instrument Price at time t
R_{T-1}:	Valuation Price on Index Calculation Day T-1
IR_{T-1}:	Interest Rate on Index Calculation Day T-1
FS_T:	Financing Spread on Index Calculation Day T
IG:	Index Fee
d:	Number of calendar days between Index Calculation Days T-1 and T

C) 2) Intraday Index Adjustment

If at time s on *Index Calculation Day T* the *Reference Instrument Price* exceeds the most recent *Valuation Price* of the *Reference Instrument* by more than 7% (*Barrier*), an "**Intraday Index Adjustment**" takes place, simulating a new day:

$$\begin{aligned} s &= T, \text{ i.e. } IDX_{T-1} (\text{new}) = IDX_s \\ R_{T-1} (\text{new}) &= R_{T-1} (\text{old}) \times 1.07 \\ d &= 0 \end{aligned}$$

A new *Valuation Price* valid after time s ($R_{T-1} (\text{new})$) is calculated by multiplying the previous *Valuation Price* ($R_{T-1} (\text{old})$) by 1.07.

The financing component remains unchanged. No additional costs are incurred for the newly simulated day.

D) EXTRAORDINARY ADJUSTMENT OF THE INDEX CALCULATION

In the event of an *Extraordinary Adjustment Event* occurring in relation to the *Reference Instrument*, the *Index Calculation Agent* will adjust the index calculation on the *Reference Date* (as defined below). The *Index Calculation Agent* will – to the extent possible – endeavour to calculate the *leverage component* as if no *Extraordinary Adjustment Event* had occurred.

The *Index Calculation Agent* will generally adjust the index calculation by correcting in its due discretion the relevant *Valuation Price* for the *Reference Instrument* on *Index Calculation Day T-1* on the *Reference Date*, in order to factor into the index calculation the adjustments made on the *Derivatives Exchange* for futures and options linked to the *Reference Instrument* traded there.

The *Index Calculation Agent* may adjust the index calculation in some other manner if it deems such adjustment necessary in its due discretion in order to reflect differences between this Index and the futures and options traded on the *Derivatives Exchange*. Such adjustments may in particular relate to the stipulation of a different *Reference Exchange*, *Derivatives Exchange* or *Reference Instrument Price*.

The list of *Extraordinary Adjustment Events* listed in section B) is not exhaustive. The deciding factor is whether the *Derivatives Exchange* deems an adjustment of the contract size, an underlying or the involvement of relevant *Reference Exchange* determining the price of the *Reference Instrument* to be necessary. If neither futures nor options linked to the *Reference Instrument* are traded on the *Derivatives Exchange*, the adjustment shall be made in a manner in which the *Derivatives Exchange* would do so if corresponding futures or options were traded there. In cases of doubt about the application of the adjustment rules of the *Derivatives Exchange*, the *Index Calculation Agent* shall decide such questions in its reasonable discretion. The rules and regulations of the *Derivatives Exchange* shall apply in addition to the provisions set out above.

If the *Reference Instrument* (Index) is cancelled or replaced by a different index concept, or if the license agreement between the *Reference Exchange* and the *Index Calculation Agent* cannot be renewed, the *Index Calculation Agent* determines – where appropriate by applying an adjusted *Reference Instrument Price* for the *Reference Instrument* at time t (R_t) – whether and which different index concept will be used in the future as a basis for calculating the Factor Index.

If the *Reference Instrument* is no longer calculated and determined and/or published by the *Reference Exchange* but by another person, company or institution that the *Index Calculation Agent* in its reasonable discretion considers to be suitable ("**Substitute Reference Exchange**"), then the Factor Index shall be calculated where applicable on the basis of the *Reference Instrument* calculated and published by the *Substitute Reference Exchange*. All references to the *Reference Exchange* contained in this index description shall be deemed to refer analogously to the *Substitute Reference Exchange*.

If in the reasonable discretion of the *Index Calculation Agent* it is not possible, for whatever reason, to stipulate a different relevant index concept, the *leverage component* shall remain unchanged and the index level shall be determined solely on the basis of the remaining components of the index formula.

"**Reference Date**" within the meaning of this index description means the first *Index Calculation Day*, on which the relevant futures or options are traded on the *Derivatives Exchange* after taking the adjustment into account, or would be so traded if corresponding futures or options were traded on the *Derivatives Exchange*.

Adjustments relating to the Factor Index and all other measures taken under this section will be published by the Index Calculation Agent in accordance with section E).

E) NOTICES

All notices pertaining to the *Factor Index* will be published on the *Information Page*. Such notices shall be deemed to have been given on the date on which they are first published.

Notices are made for informational purposes only and do not represent a precondition for legal effectiveness.