

INDEX GUIDELINE

*SOLACTIVE XP ÍNDICE DE
AÇÕES AMERICANAS DE
TECNOLOGIA VT 19%*

VERSION 1.0

19 OCTOBER 2020



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INTRODUCTION

This document (the "Guideline") is to be used as a guideline with regard to the composition, calculation and maintenance of the Solactive XP Índice de Ações Americanas de Tecnologia VT 19%. (the "Index"). Any amendments to the rules made to the Guideline are approved by the Index Committee specified in Section 4.5. The Index is calculated, administered and published by Solactive AG ("Solactive") assuming the role as index administrator (the "Index Administrator") under the Regulation (EU) 2016/1011 (the "Benchmark Regulation" or "BMR"). The name "Solactive" is trademarked.

The Guideline and the policies and guidelines referenced herein contain the underlying principles and rules regarding the structure and operation of the Index. Solactive does not offer any explicit or tacit guarantee or assurance, neither pertaining to the results from the use of the Index nor the level of the Index at any certain point in time nor in any other respect. Solactive strives to the best of its ability to ensure the correctness of the calculation. There is no obligation for Solactive – irrespective of possible obligations to issuers – to advise third parties, including investors and/or financial intermediaries, of any errors in the Index. The publication of the Index by Solactive does not constitute a recommendation for capital investment and does not contain any assurance or opinion of Solactive regarding a possible investment in a financial instrument based on this Index.



1. INDEX SPECIFICATIONS

1.1. SCOPE OF THE INDEX

The Solactive XP Índice de Ações Americanas de Tecnologia VT 19% is a USD (the "Index Currency") denominated index.

The Index takes a variable exposure to the Invesco QQQ Trust Series ETF (the Underlying ETF) with the aim to achieve an annualized volatility of less than or equal to 19%. The Index therefore notionally invests in the Underlying ETF and a hypothetical money market position at the Federal Funds rate (as published on Reuters under the RIC USONFFE=, Bloomberg FEDL01 Index). The index does allow leverage up to 125% and is calculated as a total return index.

1.2. IDENTIFIERS AND PUBLICATION

The Index is published under the following identifiers:

Name	ISIN	Currency	Type	RIC	BBG ticker
Solactive XP Índice de Ações Americanas de Tecnologia VT 19%	DE000SLOBMD1	USD	Total Return	.SOLXPTEC	SOLXPTEC Index

The Index is published via the price marketing services of Boerse Stuttgart GmbH and may be distributed to all of its affiliated vendors. Each vendor decides on an individual basis as to whether it will distribute or display the Index via its information systems. In the event that data cannot be provided to the price marketing services of Boerse Stuttgart GmbH, the Index cannot be published.

Any publication in relation to the Index (e.g. notices, amendments to the Guideline) will be available at the website of the Index Administrator: <https://www.solactive.com/news/announcements/>.

1.3. INITIAL LEVEL OF THE INDEX

The initial level of the Index on 3rd August 2006 (the "Start Date") is 100. Levels of the Index published for a period prior to the 20th October 2020 ("Launch Date") have been back-tested.



1.4. PRICES AND CALCULATION FREQUENCY

The level of the INDEX is calculated on each CALCULATION DAY from 9:00 a.m. to 10:50 p.m. CET based on the TRADING PRICES on the EXCHANGES on which the INDEX COMPONENTS are listed. TRADING PRICES of INDEX COMPONENTS not listed in the INDEX CURRENCY are converted using the current Reuters spot foreign exchange rate. Should there be no current TRADING PRICE for an INDEX COMPONENT, the later of: (i) the most recent CLOSING PRICE; or (ii) the last available TRADING PRICE for the preceding TRADING DAY is used in the calculation.

In addition to the intraday calculation a closing level of the INDEX for each CALCULATION DAY is also calculated. This closing level is based on the CLOSING PRICES for the INDEX COMPONENTS on the respective EXCHANGES on which the INDEX COMPONENTS are listed. The CLOSING PRICES of INDEX COMPONENTS not listed in the INDEX CURRENCY are converted using the 4pm London time WM Fixing quoted by Reuters. If there is no 4pm London time WM Fixing for the relevant CALCULATION DAY, the last available 4pm London time WM Fixing will be used for the closing level calculation.

1.5. LICENSING

Licenses to use the INDEX as the underlying value for financial instruments, investment funds and financial contracts may be issued to stock exchanges, banks, financial services providers and investment houses by SOLACTIVE.

2. INDEX SELECTION

2.1. INDEX CONSTITUENTS

The Index is composed of the following two underlyings (each of them an Underlying Component, together the Index Components):

Component	Name	Currency	RIC	BBG Ticker
1	Invesco QQQ Trust Series ETF	USD	QQQ.OQ	QQQ UP Equity
2	Federal Funds Rate	USD	USONFFE=	FEDL01 Index



3. CALCULATION OF THE INDEX

3.1. INDEX FORMULA

The Index Level for any Calculation Day t , denoted $Index_t$, is determined in accordance with the following formula, where $Index_0 = 100$:

$$Index_t = Index_{t-1} * \left(1 + W_{t-1} * \left(\frac{UC1_t}{UC1_{t-1}} - 1 \right) + (1 - W_{t-1}) * rate_{t-1} * \frac{DC_{t,t-1}}{360} \right)$$

With:

$DC_{t,t-1}$ = Number of Calendar Days from (and excluding) Calculation Day $t-1$ to (and including) Calculation Day t

W_{t-1} = Exposure as of Calculation Day $t-1$

$UC1_t$ = The closing level of Underlying Component 1 for Calculation Day t

$rate_{t-1}$ = Level of the Federal Funds rate for Calculation Day $t-1$

If no level is published for the Federal Funds rate for Calculation Day $t-1$, the Federal Funds rate as of the previous Calculation Day is used.

$$W_t = \min \left(maxLev, \frac{TargetVol}{realVol_{t-1}} \right)$$

With:

$TargetVol = 0.19$

$maxLev = 125\%$

The realized variance on each Calculation Day t following (and including) the VOLATILITY START DATE is calculated according to the following formula:

$$realVar_t = \max(VarLong_t, VarShort_t)$$

Where $VarLong_t$ (the long-term variance) and $VarShort_t$ (the short-term variance) are calculated on each Calculation Day t following (and including) the VOLATILITY START DATE:



$$VarLong_t = \frac{252}{59} * \sum_{i=0}^{59} \left(\ln \left(\frac{UC1_{t-i}}{UC1_{t-i-1}} \right) - \frac{1}{60} \sum_{j=0}^{59} \ln \left(\frac{UC1_{t-i}}{UC1_{t-i-1}} \right) \right)^2$$

$$VarShort_t = \frac{252}{19} * \sum_{i=0}^{19} \left(\ln \left(\frac{UC1_{t-i}}{UC1_{t-i-1}} \right) - \frac{1}{20} \sum_{j=0}^{19} \ln \left(\frac{UC1_{t-i}}{UC1_{t-i-1}} \right) \right)^2$$

The realized volatility as of Calculation Day t is calculated as follows:

$$realVol_t = \sqrt{realVar_t}$$

3.2. ACCURACY

The Index Level will be rounded to 2 decimal places.

3.3. RECALCULATION

Solactive makes the greatest possible efforts to accurately calculate and maintain its indices. However, errors in the index determination process may occur from time to time for variety reasons (internal or external) and therefore, cannot be completely ruled out. Solactive endeavors to correct all errors that have been identified within a reasonable period of time. The understanding of "a reasonable period of time" as well as the general measures to be taken are generally depending on the underlying and is specified in the Solactive [Correction Policy](#), which is incorporated by reference and available on the Solactive website: www.solactive.com.

3.4. MARKET DISRUPTION

In periods of market stress Solactive calculates its indices following predefined and exhaustive arrangements as described in the Solactive [Disruption Policy](#), which is incorporated by reference and available on the Solactive website: www.solactive.com. Such market stress can arise due to a variety of reasons, but generally results in inaccurate or delayed prices for one or more Index Components. The determination of the Index may be limited or impaired at times of illiquid or fragmented markets and market stress.



4. MISCELLANEOUS

4.1. DISCRETION

Any discretion which may need to be exercised in relation to the determination of the INDEX (for example the determination of the INDEX UNIVERSE (if applicable), the selection of the INDEX COMPONENTS (if applicable) or any other relevant decisions in relation to the INDEX) shall be made in accordance with strict rules regarding the exercise of discretion or expert judgement.

4.2. METHODOLOGY REVIEW

The methodology of the Index is subject to regular review. In case a need of a change of the methodology has been identified within such review (e.g. if the underlying market or economic reality has changed since the launch of the Index, i.e. if the present methodology is based on obsolete assumptions and factors and no longer reflects the reality as accurately, reliably and appropriately as before), such change will be made in accordance with the [Methodology Policy](#), which is incorporated by reference and available on the Solactive website: www.solactive.com.

Such change in the Methodology will be announced on the Solactive webpage under the section "[Announcement](#)", which is available at <https://www.solactive.com/news/announcements/>. The date of the last amendment of this Index is contained in this Guideline.

4.3. CHANGES IN CALCULATION METHOD

The application by the Index Calculator of the method described in this document is final and binding. The Index Calculator shall apply the method described above for the composition and calculation of the Index. However, it cannot be excluded that the market environment, supervisory, legal, financial or tax reasons may require changes to be made to this method. The Index Calculator may also make changes to the terms and conditions of the Index and the method applied to calculate the Index that it deems to be necessary and desirable in order to prevent obvious or demonstrable error or to remedy, correct or supplement incorrect terms and conditions. The Index Calculator is not obliged to provide information on any such modifications or changes. Despite the modifications and changes, the Index Calculator will take the appropriate steps to ensure a calculation method is applied that is consistent with the method described above.



4.4. TERMINATION

Solactive makes the greatest possible efforts to ensure the resilience and continued integrity of its indices over time. Where necessary, Solactive follows a clearly defined and transparent procedure to adapt index methodologies to changing underlying markets (see Section 5.2 "Methodology Review") in order to maintain continued reliability and comparability of the indices. Nevertheless, if no other options are available the orderly cessation of an index may be indicated. This is usually the case when the underlying market or economic reality, which an index is set to measure or to reflect, changes substantially and in a way not foreseeable at the time of inception of the index, the index rules, and particularly the selection criteria, can no longer be applied coherently or the index is no longer used as the underlying value for financial instruments, investment funds and financial contracts.

Solactive has established and maintains clear guidelines on how to identify situations in which the cessation of an index is unavoidable, how stakeholders are to be informed and consulted and the procedures to be followed for a termination or the transition to an alternative index. Details are specified in the Termination Policy, which is incorporated by reference and available on the Solactive website: www.solactive.com.

4.5. OVERSIGHT

An index committee composed of staff from Solactive and its subsidiaries (the "Index Committee") is responsible for decisions regarding any amendments to the rules of the Index. Any such amendment, which may result in an amendment of the Guideline, must be submitted to the Index Committee for prior approval and will be made in compliance with the "Solactive Methodology Policy", which is available at [insert address: www.solactive.com].

5. DEFINITIONS

This section contains defined terms used throughout this Guideline document.

The "Underlying Components" are the components listed in Section 2.1, together known as the "Index Components."

A "Calculation Day" is any weekday on which the underlying Index is scheduled to be published (regular Trading Day for the NASDAQ Exchange, MIC: XNAS).

The "Target Volatility" is 19%

The "**Exchange**" is, in respect of the Index and every Index Component, the respective primary exchange where the Index Component has its primary listing. The Committee may decide to declare a different stock exchange the "Exchange" for trading reasons, even if the company is only listed there via a Stock Substitute.



The "**Trading Price**" in respect of a Trading Day is the closing price on this Trading Day determined in accordance with the Exchange regulations. If the Exchange has no closing price for an Index Component, the Index Calculator shall determine the Trading Price and the time of the quote for the share in question in a manner that appears reasonable to it.

A "**Trading Day**" is in relation to the Index or an Index Component a Trading Day on the Exchange (or a day that would have been such a day if a market disruption had not occurred), excluding days on which trading may be ceased prior to the normal Exchange closing time. The Index Calculator is ultimately responsible as to whether a certain day is a Trading Day with regard to the Index or an Index Component or in any other connection relating to this document.

The "**Index Calculator**" is Solactive AG or any other appropriately appointed successor in this function.

The "**Index Currency**" is USD.

The "**Volatility Start Date**" is 2nd August 2006.

CONTACT

Solactive AG
German Index Engineering

Platz der Einheit 1
60327 Frankfurt am Main
Germany

Tel.: +49 (0) 69 719 160 00

Fax: +49 (0) 69 719 160 25

Email: info@solactive.com

Website: www.solactive.com

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