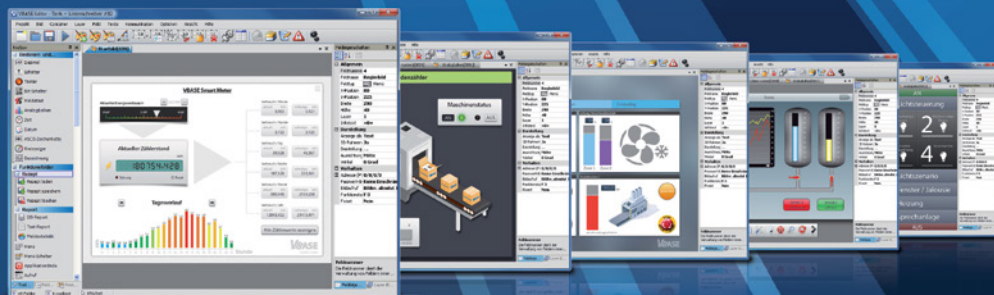


The fast way to the first  
automation project with

# VBASE

## VISAM Automation Base



## APPLICATION SUPPORT

The fast way to the first  
automation project with



VBASE-Editor version 11 or higher

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All conceivable actions have been taken, to ensure the accuracy and completeness of this documentation. Despite our greatest efforts, we can not exclude errors and we appreciate your suggestions to make this documentation even better. We point out, that all labels for hard- and software or trade names are propertie of the particular company and are used for identifying purposes only.

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# 1. IMPORTANT EXPLANATION

To provide a fast installation and implementation of the system, it is necessary to carefully read the following hints and explanations.

## 1.1 Legal basics

### 1.1.1 Copyright protection

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All rights for the assignment of patent or utility models are reserved by VISAM GmbH. Third-party products are always mentioned without annotations of patent rights. The existence of those rights is not precluded.

### 1.1.2 User qualification

The structure of this document and the use of the **VBASE** product family assumes basic knowledge of the Windows operating system and the appropriate remote systems (e.g. PLC)!

The described product handling in this documentation is directed towards automation professionals or trained persons, that are also familiar with the applicable standards. VISAM GmbH is not liable for damages to VISAM products or third-party products that are caused by mistreating or disregarding the information in this document.

**VISAM GmbH is offering inexpensive training events for the use of the mentioned products.**

### 1.1.3 Appropriate usage

All systems are delivered ex work with a fixed hard- and software configuration for the particular application. Modifications are only permitted within the possibilities showed in this documentation. All further hard- or software modifications, as well as not appropriate usage of the systems, causes non-liability of VISAM GmbH.




### 1.1.4 License contract

The use of all in this documentation mentioned application and application parts underlies the terms of the VBASE license agreement.

## 1.2 Scope of application

This document represents a general description in conjunction with certain hard- and/or software products. Pay attention to the latest and detailed documentation enclosed with this products.

## 1.3 Used symbols

	<b>Attention</b> Information that are essential for accurate and efficient work.
	<b>Hint</b> Hints and suggestions for efficient system usage or software optimization.
	<b>ESD</b> Warning for damages to system or components by electrostatic discharge. Take reasonable precautions for the handling of ESD vulnerable items.

## 2. INTRODUCTION

### 2.1 About this document

This short help information shall assist you in kick-starting with VBASE HMI / SCADA and lead you step-by-step through the building of your first control interface with the VBASE-Editor version 11 or higher.

The following methods can also be applied if you are only in possession of a VBASE demo version.

Every project built with a VBASE demo version is executable with the full version of VBASE without further processing.

### 2.2 VBASE-Editor

The „VBASE-Editor“ is the central software application for the consistent creation of applications (projects) for the VBASE HMI / SCADA product family (including VISAM Touch Panels „VTP“ and VGATE products).

With the offline version of the runtime system (VOK) the entire functionality of the VBASE Pro-RT runtime can be simulated “offline”. Online operation with a connection to a remote system (eg PLC) is not possible in this mode.

The demo version also allows the online operation, including coupling with a remote system (eg PLC), but is limited to the duration of one hour. After that time, the runtime is terminated.

### 2.3 VBASE-RT runtime systems (VOK)

The VBASE-RT runtime systems are part of the software family that contains all functions for the operation of a HMI and SCADA system and therefore, contrary to the Editor, is permanently needed for the operation of such application, similar to operating systems.

The project, created with the Editor, is being „interpreted“ and executed by the runtime system. Predefined functions are integrated as concealed software blocks into the runtime system.

VBASE-RT runtime systems are summarized under the abbreviation „VOK“ (VBASE online communication manager). They exist in different performance classes and for different environments.

For VISAM Touch Panels „VTP“ and VGATE gateways, the runtime system is „embedded“ into the operating system of the unit.

## 2.4 Further documentation

The complete VBASE HMI / SCADA documentation can be found as contextual online help within the VBASE-Editor.

A couple of example projects are available as import files from the VBASE CD or website. Those compact projects demonstrate one, single function and are not intended as visually high-quality templates.

Separate manuals (PDF files) are available for the different VBASE-RT runtime systems. Those manuals can be used as a basis for a custom manual for a machine / plant or can unaltered be given to the user / customer.

## 3. SOFTWARE INSTALLATION

### 3.1. Requirements

The installation program requires an ready installed version of Microsoft Windows XP or later.

The Microsoft .Net Framework 2.0 is required for the operation of VBASE. If the framework is not already installed, the installation program can be launched from the VBASE CD-ROM or downloaded from the website of Microsoft or VISAM.

### 3.2. Installation

Download the VBASE installer from the download section on the VISAM homepage and start the downloaded MSI file.

Or place the VBASE CD-ROM into the CD-ROM drive.

In most cases, the CD starts automatically. If this does not happen, start the application "start.exe" in the main directory of the CD drive.

In the CD menu that appears, you have the option to start the VBASE setup, to browse the product catalog, browse VBASE documentation and watch VBASE video workshops.

Start the setup with the option "install VBASE HMI / SCADA 11".  
The VBASE installation program will now start.

Follow the instructions of the installation program.

### 3.3. Online-Update

VBASE HMI / SCADA products are constantly further developed. After installation and after the first start of the Editor we recommend that you check for updated files for your application.

You can find the „Online Update“ in the „Help“ menu of your VBASE-Editor. If a new program version is available, you should upgrade your system.



## 4. STRUCTURE OF PROJECTS

### 4.1. Elements of a VBASE project

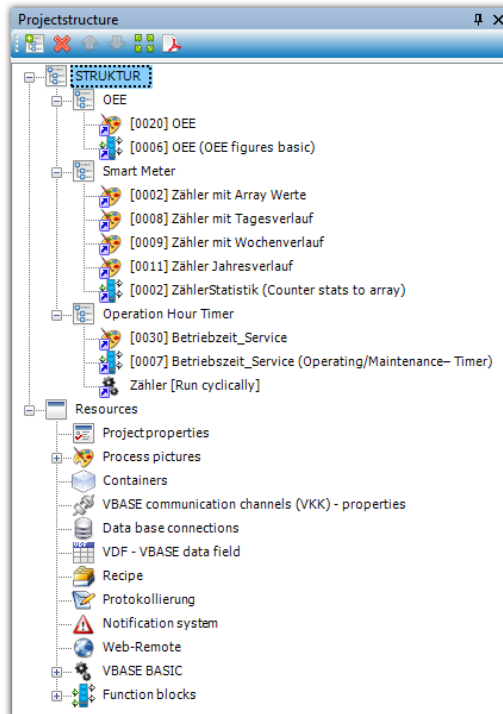
An application built with the VBASE-Editor is called „Project“.

Every VBASE Project consists of the following elements:

- 1 to max. 9999 process pictures (depending on the used runtime system!) for displaying and manipulation of process variables
- Preferences of the VBASE communication channels (VKK)
- Presetting and association of all process variables (PV) within the VBASE data field (VDF)
- Project properties
- Recipe definitions (if used)
- Logging definitions (if used)
- Properties and texts of the notification system (if used)
- VBASE-Basic Applications (if used)
- VBASE funktion blocks (if used)
- VBASE Web-Remote (if activated)

## 4.2. Project structure window

It is possible to view and manage the structure of a project in the form of a tree structure.



*Illustration 1: VBASE project structur in the tree view mode.*

All general objects (images, container, Basic programs, function blocks, etc.) are automatically added to the “Project structure” windows. They are registered under the main node “Resources”.

A user defined structural view can be arranged under the main node “structure”. All basic objects of a project can be optionally linked in this structure to obtain a clear table of contents for complex projects.

### 4.3. Structure of the VBASE runtime system (VOK)

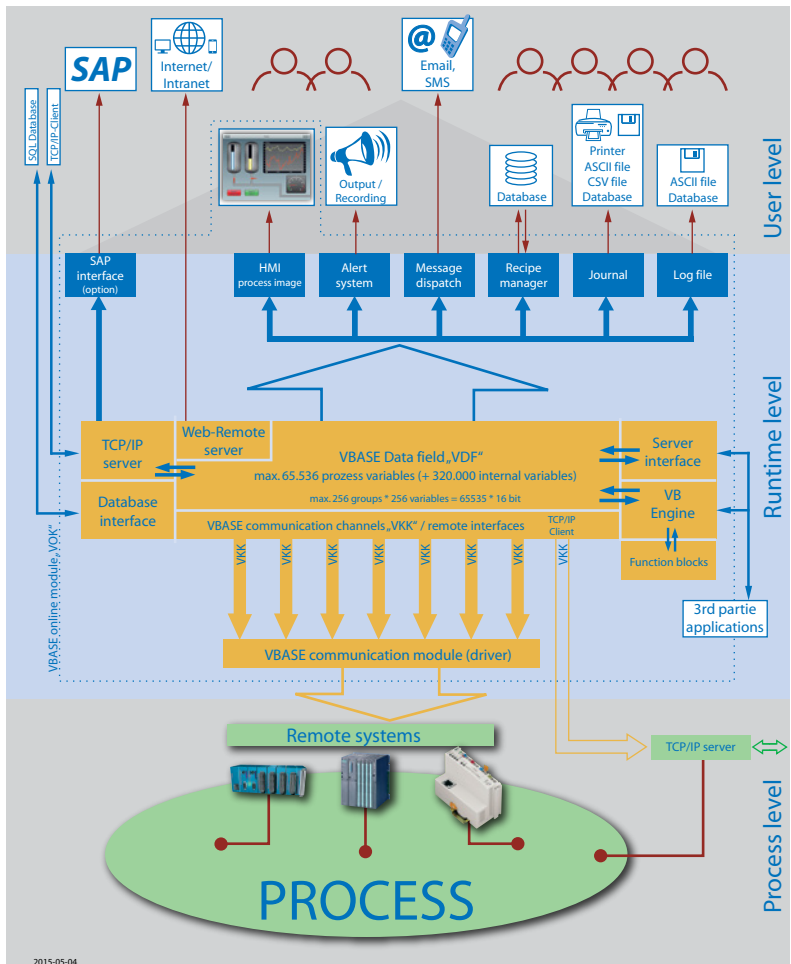


Illustration 2: System structure

### 4.4. The VBASE data field („VDF“)

The central VBASE data field „VDF“ as kernel of the system accommodates all process variables of a VBASE project.

The VDF is a, in its size constant, memory area within the runtime system. Every process variable can be assigned with a remote address of a connected remote system.

#### 4.4.1. Runtime level (system level) of the VDF

On the runtime level (see previous illustration) fields within the process picture are assigned to process variables of the VDF to visualize and change their contents.

Furthermore, variables of all global functions like logging, notification system etc. are connected to the VDF process variables by PV addresses.

#### 4.4.2. Process level of the VDF

With help of the communication channels (VKK, software interfaces) assigned communication modules (VKM), the VDF communicates with connected remote systems (e.g. PLC) on the process level. In the VDF every PV can be assigned to a remote address to connect the PV with the variable in the remote system.

#### 4.4.3. Interfaces of VBASE-Basic

For the optional access of Basic programs to the settings and process variables of the runtime system, the runtime system is equipped with a couple of software interfaces.

#### 4.4.4. VBASE function blocks

Many standardized and partly complex functions are provided by VBASE in the form of function blocks that are collected in an ever-growing library.

The available function blocks are described in a separate, accompanying documentation (PDF file).

#### 4.4.5. More interfaces of the VDF

More powerful, but in this documentation not further annotated, interfaces of the VDF serve for communication purposes with superior or third-party systems

- VOK Server
- VBASE Web-Remote Server
- ISO on TCP Server
- Modbus TCP Server

## 4.5. Process variables (PV) within the VDF

Process variables contain all necessary process data. For example: To visualize data, fields have to be assigned to PV addresses in order to display their content.

Initially, process variables (PV) are handled as data words (16 Bit) within VBASE. The PV's are organised in 256 groups the VBASE data field (VDF) with 256 PV's for each group.

It is possible to address single bit information or bit blocks in a PV. It is also possible to group PV's into blocks to obtain a more complex variable structure (e.g. 32 bit values or strings).

### 4.5.1. Remote addressing of PV in the VDF

With help of the remote addressing PV's within the VDF are being connected to variables of the remote system to dynamically exchange data during runtime.

A remote address consists of the following elements:

Channel - Assignment of a VBASE communication channel (VKK) of the online communication manager (VOK).

By assigning a channel (VKK), the PV becomes an „active PV“, which can read and write data of a remote station, determined by following parameters. For a better review, an active PV is highlighted in colour. Different colours are used for the boundary of independent blocks.

PV without active link are not being automatically refreshed by the VOK! However, they can be manipulated by remote jobs, user input (with fields) or system functions. It is also possible to give them a default value.

VBASE supports two different types of remote addressing:

1. **Absolute remote addressing**
2. **Global remote addressing**

The type of the remote addressing is depending on the used communication module (VKM)!

„Absolute addressing“ is achieved by the declaration of a explicit address (e.g. data word) in the remote system.

The following settings are necessary for absolute addressing:

- **Station number** - Identifies a remote station within in a network (e.g. PLC bus system or network)
- **Data area** - Determines a data area within the remote system that should be connected with the PV. This can be a data module (for S5 / S7 systems) of the connected PLC.
- **Word offset** - Determines the data word of a remote station that should be connected with this PV.
- **Amount of words** - Enables the block-wise association of process variables. If a value >1 is set here, a corresponding block of variables is connected with a block of variables in the remote system. A block of active PV's is displayed in unified colours.

The following parameters have no relevance for absolute addressing:

- **PV name (global name)** – serves as internal labelling of the PV in plaintext
- **Variable type** - With absolute addressing, defines only the internal type of a PV. The setting is trivial for the remote address!

„Global (or symbolic) addressing“ is achieved by the use of explicit variable names and types.

Global name and types have to exactly match the settings of the variables of the corresponding server (remote system).

**Global name** - names the linked address in clear text

**Variable type** - determines the used variable type

## 4.6. Fields

Fields belong to the most important objects of a process visualization. They represent process data and conditions and allow to manipulate them. Furthermore, they serve as navigation through the project and the functions of the runtime system (VOK).

Fields are the active parts of process pictures and lay over the background image. They can linked with process variables (PV) and display the content of the PV in different ways, depending on the type of the field.

A more detailed description of the different field types and their functionality can be found in chapter „Field selection“ in the help system.

## 5. PROJECT CREATION

### 5.1. Launch the VBASE-Editor

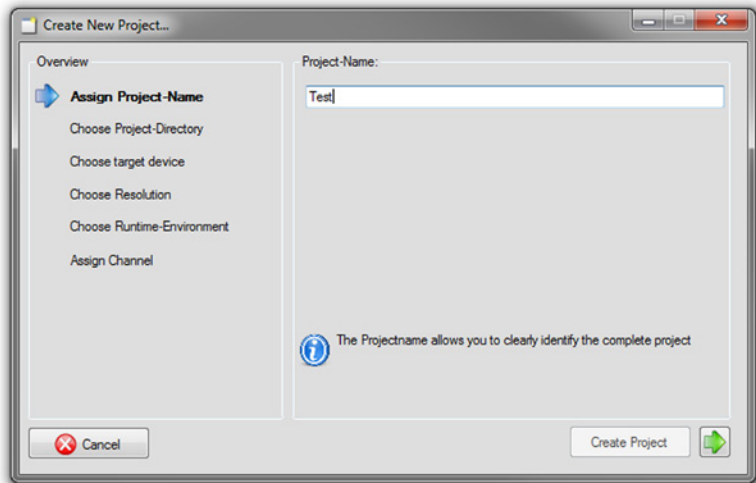
Please start the VBASE-Editor after you successfully installed it. At first you should make yourself familiar with the handling of the VBASE-Editor and adjust the windows (pallets) of the software by your choice. Please refer to chapter „Editor settings“ in the help system. You can launch the help system, related to the content, at any time by pressing the F1 button.



We strongly recommend to familiarize yourself with the system structure before you start!

### 5.2. Starting a project

After choosing the option „New“ from the Menu „Projekt“, the following dialogue appears and will guide you through all steps that are necessary to create a project.



*Illustration 3: Project new*



Please mind the hints in the lower right corner, which gives a short explanation of every step.



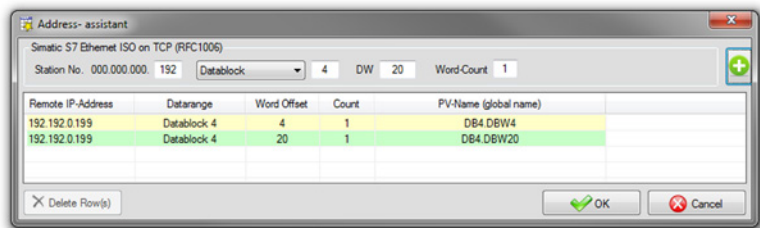
The dialogue will ask for the following parameters:

- an explicit name for the new project
- the folder name, where you want to save the project
- the used remote system (the system / device where the project is running with the runtime system) can be chosen or the properties (e.g. resolution, runtime system) manipulated.
- the first communication channel can be assigned with a communication module (driver) for the connection with a remote system
- the properties of the communication modules have to be adjusted

After all question are answered, the project will be created when you press the button „Project creation“.

### 5.3. Defining process variables (PV)

Depending on which communication module was chosen, the addressing assistant will appear after the new project was created.



*Illustration 4: Addressing assistant*

Single process variables or whole areas of variables of the connected remote system can be selected via the addressing assistant.

You can launch the addressing assistant at any time from the „Communication“ menu to define further variables.

It is also possible to define variables directly in the VDF, without using the assistant.

The addressing assistant is not available for all communication modules. Therefore it is only launched, if the assistant supports the chosen remote system! Otherwise this step will be skipped and a

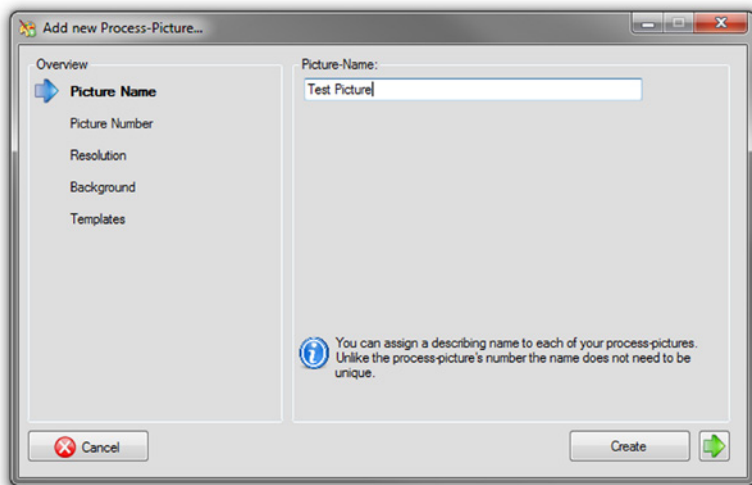
dialogue that will assist you in creating your first process picture (see next chapter) is opened. In this case, process variables can be defined within the VDF.

Detailed information about the addressing assistant and the available communication modules are available from the help system.

## 5.4. Creating process picture(s)

(Process) Pictures with the contained fields represent the most important part (the user interface) of a HMI / SCADA application. They consist of a static background image and the overlying fields.

After the previous steps are completed, a dialogue is opened, that will assist you in creating a process picture.



*Illustration 5: Picture new*

To add additional process pictures, you can start this dialogue at any time with the option „New Picture“ from the „Picture“ menu.

While creating a process picture, the following parameters are requested by the software:

- a picture name, that is just for description.
- an explicit picture number (every picture number is unique within a project and is used for addressing)
- the resolution of the new picture (is suggested based on the information from the creation of the project)
- Definition of the background image. The background can be filled with an existing image file or a user-defined colour.
- Optional templates (fields), which can serve for operation within the picture.

If all questions are answered or all properties are set, the new process picture is being created.

## 5.5. Insertion and adjustment of fields

### 5.5.1. Insert fields into a process picture

Several tools are available to add new fields to the current process picture:

1. By simply drag & drop the desired field from the window „Field repertoire“ into the process picture.
2. By selecting a field in the window „Field repertoire“ and then defining the desired size for the field in the process picture by dragging a corresponding rectangle with the mouse.
3. By choosing the option „New Field“ from the „Field“ menu a field selection is displayed. After selecting the desired field type, a new field is created in the process picture.

### 5.5.2. Adjustment of field properties

Every field has certain basic properties (properties that all fields have) and specific properties, which are necessary for certain field types. With these properties the functionality and appearance of fields is defined.

Single or multiple process variables (PV addresses) can be allocated to most fields, to e.g. visualize or control conditions (see next chapter).

All properties of a field can be reviewed and changed in the window „Field-Properties“.

A detailed description is available in the chapter „Field Properties“ in the help system.

### 5.5.3. Allocate process variables (PV) to fields

The field property „Main PV-Address“ defines which process variable of the VDF is allocated to the field to visualize their status or to change their condition.

Further secondary-addresses are can optionally be used the visualization of marginal values or similar purposes.

For the allocation of PV addresses in the window „Field Properties“, two different proceedings are available:

1. By choosing the row „Address PV“ the VBASE data field is opened and displays the contained PV for selection. You can choose the PV address by setting the values for VDF group, process variable, bit-offset and bitcount.
2. By choosing the row „Name“ beneath the particular „Address PV“ a namelist of already defined process variables can be displayed, if available.

#### 5.5.4. Explanation of a PV address

PV addresses are references to PVs within the VDF. They are composed of four numeric segments which are separated by slashes. Each segment is unique.

**VDF group / PV number / Bit-Offset / Bitcount**

**VDF group** – addresses the variable group (1-256) within the VDF

**PV number** – addresses the PV (1-256) within the group

**Bit-Offset** – addresses the first bit within the PV

**Bitcount** – addresses the amount of the allocated bits

#### 5.5.5. Complete and save your project

With the above described steps you are able to:

- add further project pictures to your project
- define further process variables
- expand your process pictures with additional fields

If all objects of the project have been created and their properties have been adjusted, you should save your project with the option „Save“ from the „Project“ menu.

### 5.5.6. Project testing

It is possible to test your projects right out of the editor. You can choose the designated runtime system. Choose the option „Test“ from the „Project“ menu to test your project.

The following dialogue asks you to select the runtime system, with which the project should be started.

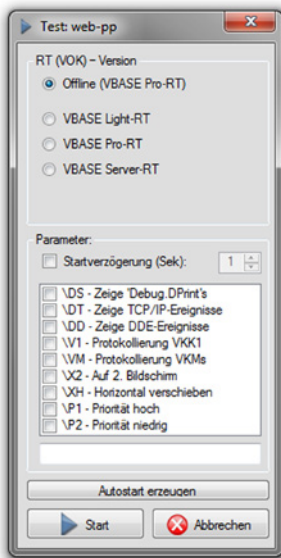


Illustration 6: Project testing

With the option „Offline“ a runtime system with deactivated process interfaces is started. Therewith it is possible to test a completed project without a connected remote system.

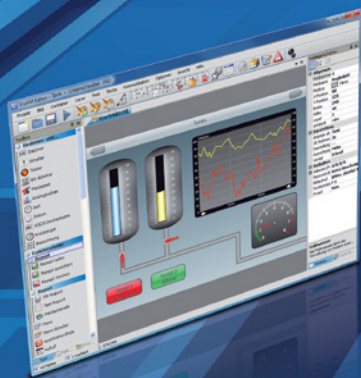


The Offline runtime system can be quit at any time by hitting the „ESC“ button.

Information about the different runtime systems (VOK) can be found in the help system.

A manual for the used runtime system can be found on the VBASE product CD.

# FITS TOGETHER PERFECTLY.



## **VBASE** HMI / SCADA

This is VBASE:

1. The HQ for your automation projects.
2. A unified and integrated development environment, for the visualization and the control of complex systems and plants, as well as for simple HMI tasks with compact operator terminals.
3. Industry-neutral, flexible and adaptable to almost every scenario.
4. Compatible with over 200 remote systems.
5. Available on desktop PCs, HMI devices, smartphones and tablets.

## **VTP** VISAM Touch Panel

The VISAM Touch Panels are:

1. Scalable in terms of display size (3.5" to 32") and computing performance.
2. Compact, fanless and extremely robust. Front panel water- and dust-tight according to IP65.
3. Flexible usage in industrial and building automation. Suitable for panel, wall and flush mounting.
4. Fully equipped with operating system, HMI editor and runtime environment.



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