Product Description

Altus BluePlant is the ultimate solution for supervisory, control and data acquisition systems. Altus reputation stands for excellence in delivering automation systems and process control products, like Programmable Logic Controllers (PLCs) and Remote Terminal Units (RTUs), offering superior performance, technology in the state of the art and features like redundancy, online change, hot-swapping, high connectivity among other high-end features. This extensive experience in industrial automation systems was the development base for this SCADA/HMI software product. The expertise and portfolio of these many different automation products grant to Altus a key position in delivering complete automation solutions.

Altus BluePlant fulfills requirements like high-performance, enhanced connectivity capabilities, an extremely rich and powerful graphical user interface and superior real-time data acquisition engines. The selection of drivers embedded in BluePlant, the capability of distributed engineering, redundancy and OPC support, BluePlant brings a new and unique user experience. Created on Microsoft's Windows Presentation Foundation (WPF), BluePlant technology allows to get the best of current graphic cards, resulting in applications with outstanding performance.

Altus BluePlant also brings the standard functionalities found in this product range, such as interaction with database servers (SQL, PI, Oracle, Sybase, Informix and others), custom network buses, a user-friendly alarm server and event notification module, a logging and reporting component, an advanced historian server, business logic management capabilities as well as support for local and remote clients, either running in computers, web, tablets and smartphones.

BluePlant Products Series

BluePlant runs natively on 64-bit computers with .NET Framework 4. There are different product models to allow the choice of best solution according needs. BluePlant can range from large enterprise solutions to embedded applications. The BluePlant models are also compatible with legacy 32-bit computers. The client displays can run on web browsers, on Windows computers and mobile devices.

The informed tags quantity in BluePlant models is done by the number of communication points, that are the tags used for communication with drivers.

BluePlant Enterprise	BluePlant Lite	BluePlant Express	BluePlant Student
Designed for plant process management and supervisory, business intelligence (BI), real-time dashboards, SCADA, advanced HMI, process control and optimization. It allows distributed clients and distributed data collection. Application sizes range from 150 communication points	Designed for panels, industrial computers, embedded devices and standalone systems. Mainly applied as machine interfaces and small centralized projects. Application sizes range from 150 up to 1,500 communication points	Designed for evaluation only, not for field installation, limited on 75 communication points and 1 hour of runtime execution	Designed for schools and universities. Application sizes range from 150 up to 1,500 communication points and 1 hour of runtime execution

To meet the needs of system integrators were developed solutions that allow the project development as on BluePlant Lite or BluePlant Enterprise. These solutions for system integrators executes only one hour the Runtime that can be performed the project tests and after this period is necessary to restart the Runtime.

All solutions for system integrators communicate fully with all programmable controllers through the main communication drivers integrated in the products.

Ordering Information

SoftKey

Included Items

The purchase of a Softkey does not deliver any physical product, just a license file that will be sent by email. The license SiteCode file generation procedure is available in the knowledge base on the Altus website https://www.altus.com.br/base-conhecimento.

Nota:

To generate the SiteCode that allows software licensing on a computer, it is necessary to download and install BluePlant Express. The free download of the BluePlant Express software is available from the website: www.altus.com.br.

Available Models

The BluePlant is divided in models according with functionalities and requirements of each application. The models available are: BluePlant Express, BluePlant Student, BluePlant Lite or BluePlant Enterprise. The next option is the application size, which is divided in many models to maximize the system performance. Also should be considered the total tags quantity available, being this quantity 10 times the communication points quantity, where the communication points are included in the total quantity.

Related Products

The following table has the codes that must be used to purchase the product:

	BluePlant Enterprise		BluePlant Lite		BluePlant Express	BluePlant Student
Communication Points	**Engineering Runtime**	**Runtime**	**Engineering Runtime**	**Runtime**	**Engineering Runtime**	**Engineering Runtime**
75	-	-	-	-	BP6400	-
150	BP1403	BP1303	BP2403	BP2303	-	-
300	BP1405	BP1305	BP2405	BP2305	-	-
500	BP1407	BP1307	BP2407	BP2307	-	-
1.500	BP1409	BP1309	BP2409	BP2309	-	BP4400
2.500	BP1411	BP1311	-	-	-	-
5.000	BP1413	BP1313	-	-	-	-
15.000	BP1415	BP1315	-	-	-	-
Ultimate	BP1499	BP1399	-	-	-	-

Notes:

Ultimate: Applications with more than 15.000 communication points should use this license.

BluePlant Enterprise: This model comes with three BluePlant clients, other accessories must be ordered separately.

BluePlant Lite: This model comes with three clients for BluePlant, and it is not possible to add more accessories.

Notas:

Engineering: Used for editing the project and necessary for integrators that do not have BP5021 Integrator SoftKey.

Runtime: Independent environment where it can be executed without using an Engineering license but without the possibility of making changes.

Solution for System Integrators

The following table shows the product codes that meet the needs of system integrators.

Code	Description
BP5021	Solution for system integrators – BluePlant Lite/Enterprise SoftKey

Note:

BP5021 Solution that allows developing projects for BluePlant Lite and BluePlant Enterprise, with no license validity limit. Allows Runtime to run for 72 hours.

Accessories

The following table has the accessories codes that can be used to purchased. These accessories only are available for BluePlant Enterprise model.

Code	Description
BP9601	BluePlant Client
BP9699	Engineering User

Hardkey (Discontinued products)

Available Models

The BluePlant is divided in models according with functionalities and requirements of each application. The models available are: BluePlant Express, BluePlant Student, BluePlant Lite or BluePlant Enterprise. The next option is the application size, which is divided in many models to maximize the system performance. Also should be considered the total tags quantity available, being this quantity 10 times the communication points quantity, where the communication points are included in the total quantity.

Related Products

The following table has the codes that must be used to purchase the product:

	BluePlant Enterprise		BluePlant Lite		BluePlant Express	BluePlant Student
Communication Points	**Engineering Runtime**	**Runtime**	**Engineering Runtime**	**Runtime**	**Engineering Runtime**	**Engineering Runtime**
75	-	-	-	-	BP6400	-
150	BP1203	BP1103	BP2203	BP2103	-	-
300	BP1205	BP1105	BP2205	BP2105	-	-
500	BP1207	BP1107	BP2207	BP2107	-	-
1,500	BP1209	BP1109	BP2209	BP2109		BP4400
2,500	BP1211	BP1111	-	-	-	-
5,000	BP1213	BP1113	-	-	-	-
15,000	BP1215	BP1115	-	-	-	-
25,000	BP1217	BP1117	-	-	-	-
50,000	BP1219	BP1119	-	-	-	-
100,000	BP1221	BP1121	-	-	-	-
Ultimate	BP1299	BP1199	-	-	-	-

Notes:

Ultimate: Applications with more than 100,000 communication points should use this license.

BluePlant Enterprise: This model comes with three BluePlant clients, other accessories must be ordered separately.

BluePlant Lite: This model comes with three clients for BluePlant, it is not possible to add more accessories.

Engineering: Used for editing the project and necessary for integrators who do not have BP50xx Integrator HardKey.

Runtime: Independent environment where it can be executed without using an Engineering license but without the possibility of making changes.

Solution for System Integrators

The following table shows the product codes that meet the needs of system integrators.

Code	Description
BP5001	Solution for system integrators with temporary license – 1 year
BP5003	Solution for system integrators with temporary license – 3 years
BP5010	Solution for system integrators – BluePlant Lite
BP5020	Solution for system integrators – BluePlant Lite/Enterprise

Notes:

BP5001, BP5003 and BP5010: Discontinued products.

BP5020: Solution that allows developing projects for BluePlant Lite and BluePlant Enterprise, with no license validity limit. Allows Runtime to run for 72 hours.

Accessories

The following table has the accessories codes that can be used to purchased. These accessories only are available for BluePlant Enterprise model.

Code	Description
BP9501	Internet Explorer viewer web Client
BP9601	BluePlant Client
BP9699	Engineering User
BP9701	Internet Explorer full web Client
BP9801	iPad/iPhone client

Note:

BP9501, BP9701 e BP9801: Discontinued products. As of BluePlant 2018.1.1, the BP9501 and BP9701 products have been unified under the BP9601 license.

Product Features

Models General Features

	BluePlant Lite	BluePlant Student	BluePlant Express	BluePlant Enterprise
Limited runtime execution	No	Yes	Yes	No
OPC DA server	Yes	Yes	No	Yes
C# language	No	Yes	Yes	Yes
Multi-threading scripts execution	No	No	No	Yes
Array tags (multiple dimensions)	No	No	No	Yes
User types (multiple levels)	No	No	No	Yes
Historian table configuration	No	No	No	Yes
Extension SDK and Toolkits	No	No	No	Yes
Concurrent remote Rich clients	No	Yes	Yes	Yes
Concurrent remote web clients (Full and/or Viewer)	Yes, 3 clients	Yes	Yes	Yes
Device node redundancy	No	Yes	Yes	Yes
Server redundancy	No	No	No	Yes
Graphical objects report	No	Yes	Yes	Yes
Extended alarms conditions	No	Yes	Yes	Yes
Project version control	No	Yes	Yes	Yes
Track changes by objects	No	Yes	Yes	Yes
Automatic historian compressing	No	No	No	Yes
WPF controls access	No	Yes	Yes	Yes
Hot Start	No	No	No	Yes
Test mode	No	Yes	Yes	Yes

Notes:

Limited runtime execution: Runtime execution limited in 1 hour. The runtime can be restarted.

C# language: It is possible create scripts using C# language.

Multi-threading scripts execution: This functionality allows create scripts and generate different threads for each script created. When this feature is enabled, then the threads execution is concurrent. When this feature is not enabled the threads execution is sequential.

User types (multiple levels): It is allowed create new data types and it is possible use up to 4 levels chained of data types.

Extension SDK and Integration toolkits: It is possible create proprietary libraries (dlls), with specific functions and use the projects.

Concurrent remote rich clients: BluePlant should be installed on a remote machine and the licenses must be present on a server machine. The number of concurrent remote rich clients depends on the number of purchased licenses.

Concurrent remote web clients (Full and/or Viewer): The number of concurrent remote web clients, both viewer and full are dependent of the number of purchased licenses except for BluePlant Lite that allows only one remote client full and none remote client viewer.

Server redundancy: To use this functionality two servers and two hardkeys with their respective licenses are necessary. Each server must have its own hardkey and then it is possible to configure the servers as a redundant pair.

Track changes by objects: This feature allows track the changes done in the displays, tags, scripts, modules and other modified objects in a project.

Hot start: It is possible to modify the application and overload it without stopping the system.

Common General Features

	BluePlant Lite, BluePlant Express, BluePlant Student and BluePlant Enterprise
Simultaneous protocols	All BluePlant models have at least 4 channels
OPC client	Yes
Open multiple projects	Yes
VisualBasic .NET language	Yes
Scripts for math expressions evaluation	Yes
Integration with external SQL database	Yes
Historian and logging	Yes
Alarm and security	Yes
WPF graphical editor	Yes
Engineering and debugging tools	Yes
Scripts to create .NET classes and tasks	Yes
Report editor	Yes
Track changes by tables	Yes
Localization	Yes

Notes:

Simultaneous Protocols: Simultaneous communication drivers running during runtime execution.

Track changes by tables: Tracking changes by tables informs what was modified, removed or inserted, but not informs where the changes were done.

Localization: This feature translates display texts and alarms in Runtime.

General Features

- Intrinsically Safe Software: In order to insure security and reliability, one of the key foundations for the development of the BluePlant platform was that there would be no use of C or C++ code, totally eliminating the risk of a “clobbered or compromised” pointer and/or memory exceptions. Each process and execution thread, whether internal or created to run in the BluePlant framework, runs in its own allocated and “protected” space with built-in exception control, memory isolation, multi-thread control and real-time synchronization. The legacy software development methodology employed with VBA, VBScript and proprietary math and logic, where potential problems could only be detected during the runtime execution, was eliminated and replaced with compiled .NET languages, with complete script validation before runtime deployment with built-in protection that adds both performance and enhanced operational stability and security.
- Superior Graphical Engine: The graphics in BluePlant are pure Windows Presentation Foundation (WPF) with full support for XAML. This allows for seamless integration with geospatial maps and 3D models. The 3D models can be directly presented, as well as linked to dynamic data with associated responses and behaviors based on real-time values and events. A powerful WPF graphical editor is included with BluePlant. The web clients rely on XBAP (browser-based applications and Silverlight) so there is no requirement for the installation of any external Active-X components.
- Enhanced Diagnostics, Testing and Maintenance Capabilities: The system provides seamless switching of project versions, allowing test mode applications to run side-by-side in the same server with the production mode applications, for validation and quality assurance, with built-in analysis of CPU usage and communication statistics of the runtime modules and networks provided. Built-in hot-standby deployment for redundancy, alternate operating locations, and disaster recovery is also included.
- Built-in Servers and .NET Extensions: Besides the built-in modules for real time database, external SQL and ERP connections, alarm and events server, historian server and reporting, BluePlant allows complete access to the whole Microsoft .NET Framework, for advanced customization and extensibility, without the addition of any kind of third party application or external tool.

BluePlant was architected from a “green field” and was created entirely without the employ of any legacy code. It is a 100% managed code application which allows to leverage and take advantage of the full potential of the Microsoft .NET Framework today as well as tomorrow. BluePlant has a configuration interface entirely created on Microsoft’s Windows Presentation Foundation Graphics (WPF) and fully supports software as a service (SaaS) deployment combined with typical on-premise (local) installations, allowing to access and to collaborate on development and projects anywhere in the world with just an internet browser.

Innovative Features

Real-Time Database (Tags)

BluePlant supports the following as built-in real-time data point types: Digital (Boolean), Analog (Integer, Double and Decimals), Text Message, Data Table, Counter, Timer and Date Time variables. Further, can be defined types with multiple levels of inherence, reference tags and tri-dimensional arrays.

The real-time database guarantees, without requiring any additional programming, the synchronization of data among multiple server processes and multiple client stations. A large set of built-in properties, such as data quality, time-stamp, lock state and locked value, simplifies and empowers the creation of the applications.

	Real-time Database (Tags)
Extensive support to tag types	Digital, Analog Int, Analog Double, Analog Decimal, Text, Timer, Counter, DateTime
Built-in data table tag type	Access dataset query results on standard .NET data table object
Reference tags	Use reference tags to switch the tag link on runtime execution
Tag arrays	Define tag arrays (one to three dimensions depending on product version)
User-defined structs and types	Definition of own extension types to the real-time database
Tag properties	Extensive set of tag properties accessible on both configuration and runtime

.NET Languages and Scripts

BluePlant is a SCADA system that fully supports the Microsoft .NET languages in complete integration within the Microsoft .NET Framework. The project scripts and logics can be written in C# or VB.NET, and a built-in language converter allows you to dynamically switch the created code between the languages.

Inside the BluePlant framework, it is possible to compile, cross-reference the objects and access directly (using the Intellisense) the .NET classes and project objects, including alarms, reports and communication nodes.

.NET languages provide a more powerful environment when compared to VBA or VBScript that are interpreted languages, not compiled. These technologies leave many programming errors that are only found when running a VBA or VBScript project in real-time, resulting many times in undesired results and consequences. The managed environment of the Microsoft .NET Framework gives one the support for finding and recovering from exceptions, thus providing a highly reliable environment for the runtime system and applications.

	.NET Languages and Scripts
Create VB.NET functions and procedures	Access BluePlant objects directly from the code
Run scripts on events and scheduling	Easy connection to tags and process events using scripts
Support for class libraries	Create own classes accessible to other scripts and displays
Built-in .NET editor with Intellisense	Help to select tag names and business objects properties
Support for exceptions and trace messages	The entire .NET Framework, external components and services are easily integrated

Alarms and Security

Multiple alarm levels for each point or tag can be defined and a whole range of behaviors, such as logging, acknowledgement, displaying, etc. is pre-packaged to simplify the configuration. The security system can define access levels up to each display object. Both alarm and security conditions are automatically replicated on redundant applications.

	Alarms and Security
Multiple alarm conditions	Hi, HiHi, Lo, LoLo, rate of change and deviation
High resolution	Millisecond range timestamp (when available) using the remote I/O time, not the computer time
Built-in visualization object	Online and historical graphical object, where it runs locally or in the web
Alarm group and item objects	Access alarms properties directly, e.g., “total alarms active”, with no requirements to create application tags

Trend and Historian

Create historian files on external databases, like Microsoft SQL Server or Oracle, or use the built-in SQL Database integrated. BluePlant allows you to save the data based on data change or group triggers and has an exclusive time-span option that prevents logging data with a timestamp smaller than a defined preset, allowing the creation of more compact databases. Access to OSIsoft's PI Server is also an option.

The time stamping feature may use the timestamp provided directly from the remote I/O, instead of from the computer, providing increased event accuracy. The organization of the samples allows you to include or remove tags for logging without losing compatibility with your past data. A complete Trend Chart object is also supplied for the visualization of both online and historical data.

	Trend and Historian
Connection with ADO databases	Historian information can be saved in any external database with ADO.NET support
Built-in SQL database	When not defined as an external database, logging is on the internal built-in SQL database
High resolution	Millisecond range timestamp (when available) using the remote I/O time, not the computer time
Trigger by tag or by group	Allows the saving of a record according to tag change, or based on process events
Historian dead band by tag	Allows the definition of the minimum tag variation to trigger recording
Minimum time span configuration	Allows the definition of a minimum interval for recording, enabling the creation of more compact databases
Database tables with multiple tags	Allows the creation of a group of tags, and stores the tags on the same data table to speed up recording and loading
Built-in trend visualization object	Online and historical graphical object, where it runs locally or in the web

Devices and Networks

BluePlant is supplied with an OPC DA driver to get information from remote devices. Besides OPC, BluePlant also supports custom communication drivers to directly access PLCs, remote I/O systems, fieldbus standards, single and multi-loops, scanners, barcode readers, RFID devices and digital displays.

The device configuration tool can import databases from OPC servers, CSV or text files. If the device is compatible, it automatically implements multi-threading on TCP/IP networks or multi-serial scenarios. The addressing syntax follows the naming convention of the remote device, making configuration and maintenance much easier, also a complete set of performance and diagnostics tools is included.

	Devices and Networks
Import data point configurations	Copy and paste from Microsoft Excel, import CSV or OPC server databases
Communication runs on isolated process	Full protection for runtime environment and enhanced performance on multi-core CPUs
Easy configuration for multiple channels	Automatically create multiple threads on multi-serial or TCP/IP protocols
Abstract naming for nodes and stations	Provides an easy way to rename and maintain IP address and I/O network configuration
Dynamically create optimized blocks	Simple selection of Read and Write points and, based on the protocol, optimized blocks are created
Points configuration follows device syntax	When addressing Device Points, the same addressing is used as PLC programming tools
Channels and nodes properties	Access properties directly, e.g., node status, application tags are not required
Customize write events	Easy setup for commands and events, write all events or only up or down value changes

Datasets

The Dataset Module, included in BluePlant provides an easy-to-use interface to exchange data in real-time with external databases, XML, CSV or text files and access SQL queries and tables.

For the most popular databases and data sources (Microsoft SQL Server, Oracle, CSV files, Microsoft Access, PI, Firebird, Informix, Excel), BluePlant supplies pre-defined configurations that reduces the settings management to a mouse-click. Any database that supports ODBC, ADO.NET or OLE-DB can also be accessed. A built-in DB SQL Database Engine is also supplied as a local database for your application(s).

The data collected with the datasets can be dynamically mapped to real-time points/tags and can be used on scripts or reports, or presented on displays using a powerful data grid visual object.

	Datasets
Access text, CSV and XML files	Define real-time binding with tags and file contents
Define multiple database sources	Easily manage multiple database connections
Tag mapping with data tables	High level configuration utility to manage the database tables used by your project
Define queries and mappings	Manage multiple queries triggered by process events and filter conditions using real-time data points
Powerful data grid visualization object	Comprehensive and powerful data grid object to create User Interfaces, local and on the web
Table and queries properties	Access properties (e.g., row count) directly, where creation of application tags not required

Reports

BluePlant supports web services, XML and other data-exchange interfaces to provide data for external reporting tools. In contrast with other packages, where the reports are necessarily created in another tool, BluePlant has its own built-in report editor.

The report editor allows the inclusion of dynamic text, dynamic graphical symbol and charts, and query results, in a complete and easy to use editor. The reports can be saved in text, HTML, PDF or XPS formats and easily presented in remote clients and web displays.

	Reports
Built-in editor	User-friendly text editor, allowing the inclusion of tables, images, hyperlinks and text formatting
Supports text, HTML and XPS	Save reports in multiple formats, such as XPS format that allows easy deployment in distributed environments
Copy and paste	If you prefer to edit in Microsoft's Word or an HTML or RTF editor, just copy and paste the contents to BluePlant
Easily embedded real-time tags	With one click, user can add real-time data values on reports

Note:

Report generation: It is not possible to make reports based on dynamic results from the database, that is, the search should always return an exact number of rows.

Report name: Limited to 63 characters and the use of special characters (such as ., $, %, etc.) is blocked.

Client Displays

The built-in graphics editor of BluePlant, using the Microsoft WPF technology, allows the easy creation of complete user interfaces with real-time mapping for process values and tags: a very powerful and complete set of dynamic animations is also included.

The displays are internally saved using XAML, which provides resolution independence, isolation from the code and easy extensibility. A symbol library, where the symbols can also keep a dynamic link with the library, speeds up the synoptic creation process. All client technologies support redundant server.

Three technologies are used in remote clients:

- BluePlant Visualizer Clients: runs as a desktop application, allows the blocking of the Windows task switch (Windows key, "CTRL+ALT+DEL and "ALT+TAB"). This is ideal for Intranet operators/users with high security requirements.
- Web Smart Clients: uses the Microsoft .NET Smart Client technology and installs on remote clients with a single-click and no administration requirements. The application is automatically updated on the remote clients, when it is updated on the server. BluePlant uses all the power of the remote computer and yet retains the advantages of a centralized installation.
- Web XBAP Partial Trust Clients: the client displays can run directly from web browsers, with no installation of any software required (nor any Active-X controls). The partial trust security guarantees that the client displays will run in a completely isolated environment. As in the case with the Smart Clients, when the application is updated on the server, it is automatically updated on the clients.

Runtime Objects

More advanced than most systems, where you must create tags or variables for all internal properties and custom logics for your projects, BluePlant allows your application(s) to directly access all the runtime objects that were created in your project.

This means that temporary tags are not required to manage the status of PLC network nodes, the total number of alarms in a group, or the number of rows in a dataset. It is possible to access runtime objects (representing a network node), an alarm group or dataset, and display required information or take action directly through their built-in properties.

Module Isolation

For enhanced performance, security and reliability, the most CPU consuming and sensitive modules, such as scripts, datasets, devices (communication drivers), reports and displays, run in their own processes, or application domain, in their own thread, independently from the server real-time database.

In addition to the previously described advantages, the BluePlant architecture also allows distribution of the data acquisition application, or any CPU intensive application, in different computers in a distributed environment, providing increased flexibility to implement many redundant scenarios and simplification for field maintenance.

Runtime and Diagnostics Tools

The property watch tool allows you to inspect and simulate values in all modules and objects and also start and stop all modules individually.

The trace window tool automatically generates system messages about important runtime events and can be easily extended to issue specific messages connected with script events, data point/tag changes or user actions.

The module information tool is an advanced performance and profiling tool that provides internal information for the entire runtime environment.

	Runtime and Diagnostics Tools
Test mode	Run projects with protections such as read-only on external devices or temporary files in the historian
Module information	Advanced tools for performance profiling and internal systems diagnostics
Localization tools	Create the operator user interface in any number of languages, and dynamically, switch between them in runtime mode
Trace window	When creating an application, this tool provides tag monitoring and system diagnostics messages
Property watch	Verify and simulate tag values and properties, start and stop functional modules

Project Test and Deployment

Before executing an application or project, user may use the exclusive BluePlant “Test Mode” that runs the project or application in a safe testing environment. In “Test Mode”, no commands are sent to the remote controllers (only the read commands are sent); alarms and historian saves data on temporary files and the external real-time databases are accessed in read-only mode.

After successfully completing testing, it is needed to run the “Startup” option for full functionality. When the project or application is ready to be deployed in the field, it should be used the “Publish” feature to set up redundancy options (if applicable), and to create a read-only, version controlled, copy of project for the field installation.

	Project Test and Deployment Tools
Open multiple projects	Simultaneously open multiple projects on the same computer
Remote engineering	Remotely access and edit your project configuration
Run as a Windows service	Run the runtime server installed as a windows service
Switch applications protection	Protect from unauthorized application switch on operator interfaces using “CTRL+ALT+DEL”, Windows key or others
Startup shortcuts	Use simple startup shortcuts and parameters for startup customization
Single file project and embedded resources	The entire project configuration is saved on a single secured file including all images and bitmaps used on displays and reports

Communication Drivers

More than 60 drivers are available for the main manufacturers of PLCs and automation systems.

	Example Communication Drivers
MODBUS	RTU-TCP Slave RTU-TCP
OPC	DA

Minimum Requirements for Installation and Operation

The models of BluePlant Student, BluePlant Express and BluePlant Lite have four channels available and for BluePlant Enterprise there are 64. The following tables show the minimum requirements for installation and operation of BluePlant using different quantities of channels.

	BluePlant Express, BluePlant Student, BluePlant Lite, BluePlant Enterprise (up to 4 channels)
Platform	Windows 7 Service Pack 1 (x86 e x64), Windows 8.1 (x86 e x64), Windows 10 (x86 e x64), Windows Server 2008 R2 SP1 (x64) or Windows Server 2012 R2 (x64)
Processor	Intel Core 2 Duo (minimum)
Disk space	2.5 Gbytes (minimum)
RAM memory	2 Gbytes (minimum), 4 Gbytes (recommended)
Resolution	1024 x 768 (minimum), 1280 x 1024 (recommended)
Language	Any language

	BluePlant Enterprise (up to 8 channels)
Platform	Windows 7 Service Pack 1 (x86 e x64), Windows 8.1 (x86 e x64), Windows 10 (x86 e x64), Windows Server 2008 R2 SP1 (x64) or Windows Server 2012 R2 (x64)
Processor	Intel Core i5 (minimum)
Disk space	2.5 Gbytes (minimum)
RAM memory	4 Gbytes (minimum), 6 Gbytes (recommended)
Resolution	1024 x 768 (minimum), 1280 x 1024 (recommended)
Language	Any language

	BluePlant Enterprise (up to 16 channels)
Platform	Windows 7 Service Pack 1 (x86 e x64), Windows 8.1 (x86 e x64), Windows 10 (x86 e x64), Windows Server 2008 R2 SP1 (x64) or Windows Server 2012 R2 (x64)
Processor	Intel Core i7 (minimum)
Disk space	2.5 Gbytes (minimum)
RAM memory	6 Gbytes (minimum), 8 Gbytes (recommended)
Resolution	1024 x 768 (minimum), 1280 x 1024 (recommended)
Language	Any language

	BluePlant Enterprise (Server Redundancy)
Platform	Windows 7 Service Pack 1 (x86 e x64), Windows 8.1 (x86 e x64), Windows 10 (x86 e x64), Windows Server 2008 R2 SP1 (x64) or Windows Server 2012 R2 (x64)
Processor	Intel Core i7 (minimum)
Disk space	2.5 Gbytes (minimum)
RAM memory	16 Gbytes
Resolution	1024 x 768 (minimum), 1280 x 1024 (recommended)
Language	Any language

Note:

Platform: For BluePlant, BluePlant Student, BluePlant Express and BluePlant Lite, it is necessary Microsoft .NET Framework 4.6 installed.

> ATTENTTION:
> The channels quantity and data acquisition performance are the typical reasons to select the hardware requirements. If more than 16 channels are necessary or there are other demanding project specifications, then it is extremely recommended use systems based on servers and contact Altus Technical Support by website www.altus.com.br or e-mail altus@altus.com.br.

Manuals

For more technical details, configuration, installation and programming of BluePlant, see the documents listed in the table below. These documents are available in the last revision in www.altus.com.br.

Document code	Description	Language
MU224600 **MU224000**	BluePlant Series Utilization Manual Manual de Utilização Série BluePlant	English Portuguese

Also it is recommended to the following documents as a source of additional information:

- NAP151 - Utilização do Tunneller OPC
- NAP154 - Utilização de Base de Dados com BluePlant
- NAP155 - Utilização de Base de Dados MySQL com BluePlant
- NAP156 - Utilização de Base de Dados Microsoft SQL Server com BluePlant
- NAP157 - Redundância de Servidores SCADA com BluePlant

<table>
<tr><th>Family</th><th>Type</th><th>Model</th><th colspan="2">Additional Accessories</th></tr>
<tr><td rowspan="18">BluePlant Enterprise
comes with three BP9601</td><td rowspan="9">Engineering/Runtime comes with one BP9699</td><td>BP1403 (150 points)</td><td rowspan="18"></td><td rowspan="18"><table><tr><th></th><th>Quantity:</th></tr><tr><td>BP9601 (BluePlant Client):</td><td></td></tr><tr><td>BP9699 (Engineering User):</td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr></table></td></tr>
<tr><td>BP1405 (300 points)</td></tr>
<tr><td>BP1407 (500 points)</td></tr>
<tr><td>BP1409 (1.500 points)</td></tr>
<tr><td>BP1411 (2.500 points)</td></tr>
<tr><td>BP1413 (5.000 points)</td></tr>
<tr><td>BP1415 (15.000 points)</td></tr>
<tr><td>BP1499 (unlimited)</td></tr>
<tr><td rowspan="9">Runtime</td></tr>
<tr><td>BP1303 (150 points)</td></tr>
<tr><td>BP1305 (300 points)</td></tr>
<tr><td>BP1307 (500 points)</td></tr>
<tr><td>BP1309 (1.500 points)</td></tr>
<tr><td>BP1311 (2.500 points)</td></tr>
<tr><td>BP1313 (5.000 points)</td></tr>
<tr><td>BP1315 (15.000 points)</td></tr>
<tr><td>BP1399 (unlimited)</td></tr>
<tr><td rowspan="8">BluePlant Lite
comes with three BP9601</td><td rowspan="4">Engineering/Runtime comes with one BP9699</td><td>BP2403 (150 points)</td><td colspan="2" rowspan="8">Do not support additional accessories.</td></tr>
<tr><td>BP2405 (300 points)</td></tr>
<tr><td>BP2407 (500 points)</td></tr>
<tr><td>BP2409 (1.500 points)</td></tr>
<tr><td rowspan="4">Runtime</td><td>BP2303 (150 points)</td></tr>
<tr><td>BP2305 (300 points)</td></tr>
<tr><td>BP2307 (500 points)</td></tr>
<tr><td>BP2309 (1.500 points)</td></tr>
<tr><td>BluePlant Express</td><td>Engineering/Runtime comes with one BP9699</td><td>BP6400 (75 points)</td></tr>
<tr><td>BluePlant Student</td><td>Engineering/Runtime comes with one BP9699</td><td>BP4400 (1.500 points)</td></tr>
</table>