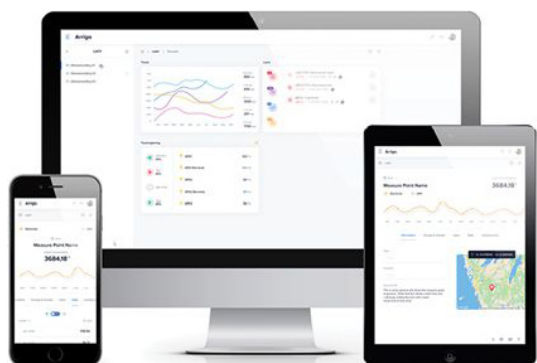


Arrigo BMS

Web-based HMI/SCADA platform
for Building Management



Regin's scalable HMI/SCADA solution Arrigo BMS empowers Regin system integrators and facility owners. With an HTML5-based, future-proof technology you save hours in integration, commissioning, and maintenance. With Arrigo BMS, everything in your Regin system can be controlled, visualized and analyzed anytime on your mobile device. Arrigo BMS is compatible with all generations of Regin field products, ensuring a smooth transition to the next generation of building management.

- ✓ One platform for collaboration improves productivity across the entire operation
- ✓ Role-based and personalized views with widgets for timely and informed decisions
- ✓ Real-time access to critical information enables fast analysis and instant actions
- ✓ Smooth upgrade from EXOscada. Reuse configurations and graphics.
- ✓ Your Arrigo platform will work with the future generations of Regin controllers and field products

The Arrigo platform

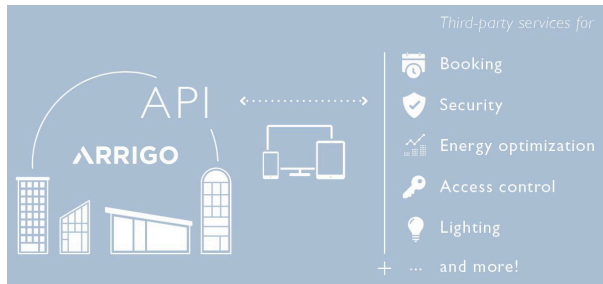
The scalable platform Arrigo covers all aspects of the management of a connected building. Arrigo provides building management, energy management and facility management in one. Arrigo comes with an intuitive interface with real-time access to relevant information giving you the opportunity to take instant action from any mobile device.

Whether you are a building owner or an integrator working with Regin's EXOscada today, Arrigo is the next step into the future generation of building management.



All your data in one platform

Arrigo BMS is an efficient tool for integrators who want to provide their customers with outstanding user experience and add-value services. The Arrigo BMS application aggregates data from all your Regin systems and subsystems, including IT-systems, hotel booking systems, cloud services, etc. Data is consumed through an intuitive and responsive interface based on dashboards and smart widgets. A shared source of data for building owners, caretakers and system integrators enables effective collaboration, swift decision making, and instant follow-up on implemented actions.



Quick and easy setup

Arrigo BMS is a new technological platform that easily integrates with Regin's existing EXO system with all Regin controllers and field products connected to it. The unique feature of Arrigo BMS is its strong capability of connecting tightly to third-party systems, enabling the full digitalization of buildings.

For existing users of EXO4 and EXOscada entering the world of Arrigo BMS is the next step towards the future of building management.

✓ EXO4

EXO4 is the earliest version of SCADA/HMI software for the operation of the Regin EXO system. This SCADA version was discontinued and succeeded by the next generation, EXOscada. Nevertheless, there are still a few systems left that use EXO4 today.

For users of EXO4, it's possible to upgrade to Arrigo BMS through a series of upgrades:

- ✓ Upgrade EXO4 in steps to the latest version of EXOscada
- ✓ Upgrade EXOscada to Arrigo BMS (Arrigo local 1.1)

✓ EXOscada

EXOscada is the successor of EXO4 and the predecessor of Arrigo BMS. With a shift to HTML5 and the introduction of Arrigo BMS, Regin announced the end of life for EXOscada, EXOscada Chromium, and EXOscada viewer. Support and distribution of any version of EXOscada will end by the 31st of December 2023. For users of EXOscada it is possible to go through a smooth transition.

- ✓ Upgrade to the latest version of EXOscada
- ✓ Install Arrigo BMS (Arrigo Local 1.1)
- ✓ Import your existing projects to Arrigo BMS and reuse configurations and graphics

Arrigo API

Arrigo BMS is equipped with a stable API to facilitate imports and exports of data from various systems. Through the open API, Arrigo BMS makes all data fully available and can interconnect to other systems, such as hotel booking services, business intelligence, etc. Data can be used either directly in Arrigo BMS, or it can be consumed by other systems that connect through the open API.

Through simple technology based on GraphQL/REST on http over SSL you can add and delete information, read and write values, retrieve information, history, stored and real-time data. You can also connect via the web socket directly to Arrigo's backbone and write your own extensions that can be called via server-side functions.

```
$url = "https://services.regin.se/ci/arrigo/api/login"

$headers = @({
  "Content-Type" = "application/json"
})

$body = @({
  "username": "user",
  "password": "password"
})

$loginResponse = Invoke-WebRequest -Uri $url -Method POST -Body $body -Headers $headers | ConvertFrom-Json
Write-Host $loginResponse.authToken
```

Third party integration

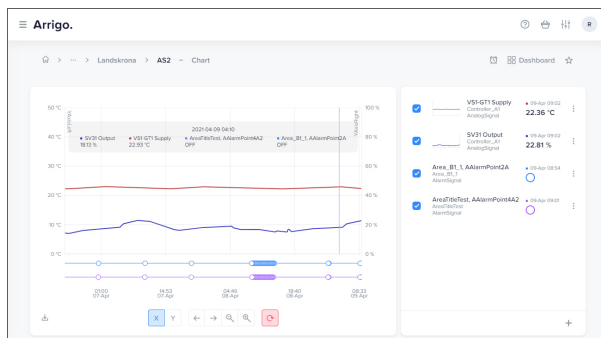
Arrigo BMS uses Regin's communication protocol EXOline as its native SCADA interface. In addition, users can integrate with controllers of any brand via OPC. If users require data from third-party systems in their controllers, this can easily be achieved through various interfaces, including Modbus, BACnet, and Mbus. Anyone working with Arrigo BMS can work in a flexible way to aggregate data, regardless of the source.

Charts, data logging and real-time trends

In Arrigo BMS, you can easily track historical information in order to make informed decisions. Users can freely choose analog, digital and alarm signals to be presented in a historical chart window as a trend. Depending on the type of signal, logging of historical data can be conducted as:

- ✓ Variable-based time logging: fixed interval sampling, commonly used for analog values.
- ✓ Event-based logging: only logged when the event occurs, commonly used for digital and alarm signals.
- ✓ Real-time logging: only logged while the signal is shown in the historical chart window. The logging updates continuously and is lost when the window is closed. Real-time logging can be used with any signal in Arrigo BMS.

The chart enables the user to view, zoom, scroll and export data. Furthermore, the work done can be saved to be continued later either as personal work or as global work available to all users of the system.

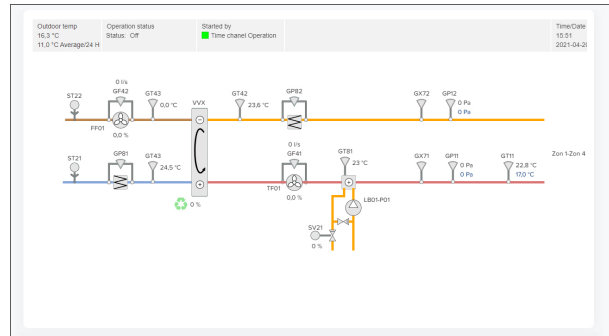


Dynamical flowcharts

Dynamic flowcharts can be great tools to visualize automation environments. Arrigo BMS provides a tool kit for creative work and gives integrators access to a comprehensive library of graphical objects that can be used as they are, or adjusted to suit any application.

With Arrigo BMS, integrators can work efficiently to create:

- ✓ graphic symbols
- ✓ complex shapes
- ✓ animations and interactions by running Javascript inside an SVG
- ✓ adjustments through graphic attributes, such as fill style, line style, orientation, positioning, and visibility

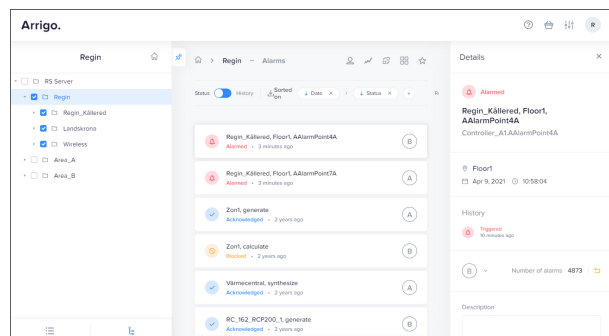


Full alarm handling

Lack of actionable information in alarms generated by building management systems is a common challenge for facility managers. Knowing the source of an alarm and being able to take immediate action is key to the reduction of downtime and efficient resolutions of potentially critical situations. Arrigo BMS is your system hub that collects all data from various sources. Via Modbus, BACnet, Mbus, and OPC, Arrigo BMS connects to controllers and field products in the system and communicates alarms instantly. Arrigo BMS provides efficient alarm functionalities that allow users to structure alarms and ensure that the right roles are informed at the right time to take the right actions.

Alarm functions in Arrigo BMS:

- ✓ Alarm widgets for real-time overviews and access to historical alarms
- ✓ Runtime configurable tools for quick determination of the nature and location of an alarm, with options for fast analysis and actions, such as acknowledgment, blocking, etc.
- ✓ Wide variety of filter possibilities
- ✓ Possibility to add alarms in historical charts



Time channels

Up to 30 time channels can be used in a single controller. Each time channel is connected to a logic interface variable, which can be used by application programmers in their programs. For each time channel, schedules can be set up for each day of the week and as well as for holidays.

The holiday schedule can be configured with dates and times for when to use it instead of the regular week day schedules.

Reports

Reporting is indispensable for applications and systems with advanced data processing and analysis capabilities. In Arrigo BMS, any data fetched from the data model can be used to build a report:

- ✓ Data coming from hardware devices (e.g., a controller)
- ✓ Properties of system resources
- ✓ Query results
- ✓ Historical property values or events selected by custom criteria
- ✓ Data generated by a script

Reports should be your main go-to strategy when you are trying to avoid nuisance alarms. As a matter of fact, reports can be a great strategy for prioritizing maintenance efforts.

Reports can be exported to various formats, such as CSV or PDF, and can also be sent via email. Reports can be triggered manually, on events or on a schedule.

Scripting

For customers who require a deeper level of customization or integration, Arrigo BMS provides an open platform for client-side and server-side scripting. Arrigo BMS uses JavaScript (ECMA script 6 standard) which enables advanced logic, data mining, SQL access, implementation of custom functions, access to other applications and APIs.

JavaScript is native to Arrigo's server-side scripting and widely supported by common web browsers for client-side scripting. It has a low threshold to get started and is one of the most commonly used programming languages for all types of applications.

```
1 <!DOCTYPE html>
2 <html lang="en">
3 <head>
4   <meta charset="utf-8">
5   <title>JavaScript Handling the Focus Event</title>
6 </head>
7 <body>
8   <script>
9     function highlightInput(elm){
10      elm.style.background = "yellow";
11    }
12  </script>
13  <input type="text" onfocus="highlightInput(this)">
14  <button type="button">Button</button>
15 </body>
16 </html>
```

Security, access and rights management

Arrigo BMS provides a selection of integrated security models and options to match your requirements, including:

- ✓ Password and user information are stored on the server and utilize a Sha256 password hash algorithm.
- ✓ User capabilities in the Arrigo BMS application are based on areas of responsibility and authority
- ✓ Microsoft Windows Authentication grants permissions to Arrigo BMS users authenticated on a domain controller or local computer, based on user identity and group affiliations
- ✓ Arrigo customers also enjoy secure integration all the way down to the level of each data element or attribute.
- ✓ Safe communication through http and WebSocket over TLS 1.3 encrypted connection (HTTPS and WSS).



Language support

Arrigo BMS is developed with full native support for English, German, French and Swedish for both integrators and end-users. The operator interface is available in a number of additional languages. Please contact your local market support for more information.

System requirements

Arrigo BMS requires a 64-bit Windows version on the following OS:

- ✓ Windows 10
- ✓ Windows Server 2016
- ✓ Windows Server 2019

Arrigo BMS Installer requires PowerShell 5 or newer to run.

Licences

Arrigo BMS is included when buying one of the Base licences below.

Article	Description	CONTRACT*1 ¹	SUB*1 ²
ARR1-CORE	Arrigo BMS Core license with 200 I/O, including one year free updates	ARR1-CORE-CONTRACT	ARR1-CORE-SUB
ARR1-IO-100	Package with 100 I/O for Arrigo BMS	ARR1-IO-100-CONTRACT	ARR1-IO-100-SUB
ARR1-IO-500	Package with 500 I/O for Arrigo BMS	ARR1-IO-500-CONTRACT	ARR1-IO-500-SUB
ARR1-IO-10000	Package with 10 000 I/O for Arrigo BMS	ARR1-IO-10000-CONTRACT	ARR1-IO-10000-SUB
ARR1-OPC-CLIENT	OPC Client for Arrigo BMS, One license needed for each OPC Server attached	ARR1-OPC-CLIENTCONTRACT	ARR1-OPC-CLIENT-SUB
ARR1-NIMBUS	License for Nimbus Alarm Server	-	-

1. *CONTRACT*1* - Upgrade agreement for corresponding license, 12 months

2. *SAAS Service agreement* for corresponding license, 12 months (no base license, just yearly fee)