

AVEVA

InduSoft Web Studio 2020

Quick Start Guide

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Introduction

InduSoft Web Studio 2020 (or IWS, for short) is a powerful, integrated tool that exploits key features of Microsoft operating systems and enables you to build full-featured SCADA (Supervisory Control and Data Acquisition) or HMI (Human-Machine Interface) programs for your industrial automation business.

This *InduSoft Web Studio 2020 Quick Start Guide* is intended for individuals using IWS for the first time. This publication will help you quickly familiarize yourself with the basic functions of IWS.

Conventions used in this documentation

This documentation uses standardized formatting and terminology to make it easier for all users to understand.

Text conventions

This documentation uses special text formatting to help you quickly identify certain items:

- Titles, labels, new terms, and messages are indicated using *italic* text (for example, *Object Properties*).
- File names, screen text, and text you must enter are indicated using **monospace** text (for example, `D:\Setup.exe`).
- Buttons, menu options, and keyboard keys are indicated using a **bold** typeface (for example, **File** menu).

In addition, this documentation segregates some text into **Tip**, **Note**, and **Caution** boxes:

- **Tips** provide useful information to save development time or to improve the project performance.
- **Notes** provide extra information that may make it easier to understand the nearby text, usually the text just before the note.
- **Cautions** provide information necessary to prevent errors that can cause problems when running the project, and may result in damage.

Mouse and selection conventions

Because most PCs used for project development run a version of Microsoft Windows with a mouse, this documentation assumes you are using a mouse. Generally, a PC mouse is configured for right-handed use, so that the left mouse button is the primary button and the right mouse button is the secondary button.

This documentation uses the following mouse and selection conventions:

- **Click** and **Select** both mean to click once on an item with the left mouse button. In general, you click buttons and you select from menus and lists.
- **Double-click** means to quickly click twice on an item with the left mouse button.
- **Right-click** means to click once on an item with the right mouse button.
- **Select** also means you should use your pointing device to highlight or specify an item on the computer screen. Selecting an item with a touchscreen is usually the same as selecting with a mouse, except that you use your finger to touch (select) a screen object or section. To select items with your keyboard, you typically use the Tab key to move around options, the Enter key to open menus, and the Alt key with a letter key to select an object that has an underlined letter.
- **Drag** means to press down the appropriate mouse button and move the mouse before releasing the button. Usually an outline of the item will move with the mouse cursor.

Windows conventions

This documentation uses the following Windows conventions:

- **Dialogs** are windows that allow you to configure settings and enter information.
- **Text boxes** are areas in dialogs where you can type text.
- **Radio buttons** are white circles in which a black dot appears or disappears when you click on the button. Typically, the dot indicates the option is selected or enabled. No dot indicates the option is cleared or disabled.
- **Check boxes** are white squares in which a check (Titlebar) appears or disappears when you click on it with the cursor. Typically, a check indicates the option is selected or enabled. No check indicates the option is cleared or disabled.
- **Buttons** are icons in boxes appear "pressed" when you click on them.
- **Lists** are panes (white boxes) in windows or dialogs containing two or more selectable options.
- **Combo boxes** have arrows that, when clicked, show part or all of an otherwise concealed list.

- **Dockable windows** are windows that you can drag to an edge of the interface and merge with that edge.

About this software

InduSoft Web Studio 2020 (or IWS, for short) is powerful software for developing HMI, SCADA, and OEE/ Dashboard projects that can be deployed anywhere.

Each IWS project consists of:

- A project tags database to manage all run-time data, including both internal variables and I/O data;
- Configurable drivers to communicate in real-time with programmable logic controllers (PLCs), remote I/O devices, and other data-acquisition equipment;
- Animated human-machine interface (HMI) screens and overall equipment effectiveness (OEE) dashboards; and
- Optional modules such as alarms, events, trends, recipes, reports, scriptable logic, schedulers, a project security system, and a complete database interface.

After you develop your project, you can either run it locally on your development workstation or download it to a remote computer and run it there. The project runtime server processes I/O data from connected devices according to your project parameters and then reacts to, displays, and/or saves the data.

Product features

ActiveX and .NET

Use third-party controls to enhance your project. This software is a container for ActiveX and .NET controls. Add functionality such as browsers, media players, charting, and other tools that support the ActiveX and .NET interface standards.

Alarms

In addition to all of the alarm functions you would expect, this software also sends alarms using multi-media formats like PDF. Use remote notification to have alarms sent right to your email inbox, a printer, or a smartphone! Alarms are real-time and historical, log data in binary format or to any database.

Animation

This software gives you great command over graphics. Paste images, and even rotate them dynamically. Fill bar graphs with color, or adjust the scale of objects with easy-to-use configuration. Other animations include "command" (for touch, keyboard and mouse interaction), hyperlink, text data link, color, resize (independent height and width), position, and rotation (with custom rotation point).

Database

Connect to SQL databases (MS SQL, MySQL, Sybase, Oracle), MS Access and Excel, and ERP/ MES systems (including SAP), even from Windows Embedded. Flexible enough to have a built-in interface without the need to know SQL (for trends, alarms/events, grid and other objects), or use any SQL statement you need anywhere you need it.

Drivers

This software includes over 240 built-in communication drivers for most PLCs, temperature controllers, motion controllers, barcode/RFID readers, and other devices. Use these built-in drivers without the need for OPC servers (but are an optional connection method).

Email

Send email via SMTP to any desktop or mobile device. Get real-time information on alarms, process values, and other events. This software supports SSL encryption allowing the use of third-party providers such as Gmail.

Events

This software offers traceability for operator initiated actions or internal system activity. Log events such as security system changes (user logon or off), screen open/close, recipe/report

operations, custom messages and system warnings. Also any tag value changes including custom messages.

FDA Traceability

Take advantage of built-in traceability and e-signature features to create projects that fully comply with U.S. Food and Drug Administration regulations (Title 21 CFR Part 11). These features are often used in food and pharmaceutical applications, but they can be used in any application where traceability is required.

FTP

Automatically upload or download files during run time to/from remote storage locations using FTP and flexible scripting functions. Configure FTP via scripting or the included configuration interface.

Graphics and Design Tools

Create powerful screens to meet any application need using the improved tools in our graphic interface. Combine built-in objects to create any functionality required. Store graphics in the symbol library for future use. Easily make projects across a product line share a consistent "look and feel".

Historical Performance

We have optimized the trend history module and designed it to load millions of values from SQL relational databases with high performance, with built-in data decimation in the Trend Control. Easy-to-use tools provide quick access to Statistical Process Control (SPC) values without any need for programming.

Intellectual Property Protection

Screens, documents, scripts and even math worksheets can be individually password protected. This prevents unauthorized viewing or editing of your corporate custom functionality. Protect the entire project with just a few mouse clicks.

Multi-Language

Develop your project in one of many development languages, including English, Portuguese, German, and French.

OPC

As an alternative to the built-in drivers for direct communication with PLCs, you can also use any of several different versions of OLE for Process Control (OPC) to manage your devices. This software includes support for "classic" OPC DA (client or server), OPC UA (client or server), OPC XML-DA (client only), and OPC HDA (server only).

PDF Export

Send Alarms, Reports, or any file (including .doc or .txt) to a production supervisor, quality manager, or maintenance staff using the included PDF writer.

Recipes

Save time and maintain consistency by automating part parameters or productions quantities with any triggering event.

Redundancy

For critical applications where data is vital, this software supports web server, database and overall system redundancy.

Reports

Create clear, concise reports in text format, graphical RTF, XML, PDF, HTML, and CSV, or integrate with Microsoft Office. Get the data you need, in the format you need it, to make informed decisions, fast.

Scalable

Develop once and deploy anywhere, on any currently supported version of Microsoft Windows.

Scheduler

Schedule custom tag changes on date/time, frequency, or any trigger. Use this for simulation, to trigger reports or other functionality at a particular time of day, or even to trigger driver worksheets to read/write at a scan rate you choose.

Scripting

Two powerful scripting languages are supported. Use built-in functions or use standard VBScript to take advantage of widely available resources. Both can be used simultaneously to give you the functionality you need.

Security

This software provides support for group and user accounts, e-signatures, and traceability, as well as support for Lightweight Directory Access Protocol (LDAP). Integrate your project with your Active Directory, including Active Directory Application Mode (ADAM).

SSL Support for Emails

Native support for Secure Socket Layer (SSL), which makes it easy and secure to send emails from this software using third-party tools such as Gmail!

Standards

Take advantage of common industry standards to develop projects that are compatible with any format. TCP/IP, ActiveX/.NET, OPC (client and server), COM/DCOM, OLE, XML, SOAP, and HTML are all supported.

SNMP

Easily configure managed networked devices on IP networks (such as switches and routers) using incorporated SNMP configuration commands and an easy-to-use configuration interface.

Symbols

An extensive library of pre-made symbols features push buttons, pilot lights, tanks, sliders, meters, motors, pipes, valves and other common objects. Use the included symbols in your project, modify existing symbols to suit your needs, or create your own from scratch. Plus support for third-party symbol libraries and graphic tools.

Tags Database

This software features an object-oriented tags database with boolean, integer, real, strings, arrays, classes (structures), indirect tags, and included system tags.

Thin Clients

Remotely view project screens on several different types of thin clients. Use the standalone Secure Viewer to achieve the greatest security on plant-floor stations. Use the Web Thin Client add-on for Internet Explorer to achieve the greatest flexibility on Windows desktops. Or use the HTML5-enabled Mobile Access to access your project from almost any other browser or mobile device.

Trends

Real-time and Historical trends are supported. Log data in binary format or to any database locally and remotely. Color or fill trends with graphic elements to enhance clarity of data. Date/Time based or numeric (X/Y plot) trends give you the flexibility to display information that best suits your project.

Troubleshooting

Quickly debug and verify a project using local and remote tools for troubleshooting, including status fields, Watch and LogWin. Capture screen open and close times, see communications in real-time, and messages related to OPC, recipes/reports, security, database errors and even custom messages. Quickly get your project finished using these powerful tools.

About the InduSoft Web Studio 2020 software components

The InduSoft Web Studio 2020 software suite comprises several individual components that can be installed on different platforms to perform different functions. The architecture of your finished IWS project depends on which components you install, where you install them, and how you connect them to each other.

The following table lists all of the available components.

| Component | Features | Platforms |
|---|--|--|
| SCADA | <ul style="list-style-type: none"> Project development environment Tag integration Remote management of project runtimes Project runtime Agent to allow remote management Project viewer | <ul style="list-style-type: none"> Windows Windows Server Windows Embedded Standard |
| Embedded HMI (incl. Remote Agent) | <ul style="list-style-type: none"> Project runtime (limited tags and drivers) Agent to allow remote management Project viewer | <ul style="list-style-type: none"> Windows Embedded Standard |
| Compact HMI (incl. Remote Agent) | <ul style="list-style-type: none"> Project runtime (limited tags and drivers) Agent to allow remote management Project viewer | <ul style="list-style-type: none"> Windows Embedded Compact |
| IoT View (incl. Remote Agent) | <ul style="list-style-type: none"> Project runtime (limited tags and drivers) Agent to allow remote management | Linux and others (i.e., platform-agnostic); for more information, contact us. |
| Studio Database Gateway (StADOSvr) | <p>Enables communication between the project runtime and external databases, including Historian and most ADO.NET-compatible databases.</p> <p>Should be installed separately when using Embedded HMI or Compact HMI, because most ADO.NET data providers are not available for Windows Embedded.</p> <p>Must be installed separately when using IoT View, because Studio Database Gateway runs only on Windows.</p> | <ul style="list-style-type: none"> Windows Windows Server Windows Embedded Standard Windows Embedded Compact |
| Web Tunneling Gateway (WTG) | Enables a public-facing web server to pass data between the project runtime and project viewers, when the project runtime is located on a secure, private network. | <ul style="list-style-type: none"> Internet Information Services (IIS) for Windows |
| Mobile Access Runtime | Enables the project runtime to serve HTML5-enhanced project screens to web browsers and mobile devices. | <ul style="list-style-type: none"> Internet Information Services (IIS) for Windows any CGI-enabled web server (e.g., Apache) |
| Secure Viewer (a.k.a. InduSoft Thin Client) | Project viewer, as a standalone program. (See note below.) | <ul style="list-style-type: none"> Windows Windows Server Windows Embedded Standard |
| Web Thin Client | Project viewer, as a browser add-on. (See note below.) | <ul style="list-style-type: none"> Internet Explorer for Windows |

It is important to distinguish between the project development environment and the project runtime. You can use the project development environment to design, develop, troubleshoot, deploy, and monitor projects. In

contrast, the project runtime actually runs your project, communicates with external databases and devices, and serves screens to project viewers.

The full InduSoft Web Studio 2020 software for Windows includes both the project development environment and the project runtime. Your software license determines which parts of the software you can use on any given computer or device. For more information, see [Execution Modes](#) on page 24.

In contrast, Embedded HMI and Compact HMI are the runtime editions for Windows Embedded Standard and Windows Embedded Compact, respectively. They cannot be used for project development, so they have lower system requirements than the full InduSoft Web Studio 2020 software.

IoT View is a new, platform-agnostic runtime edition for other embedded devices. It has very low system requirements and somewhat limited features.

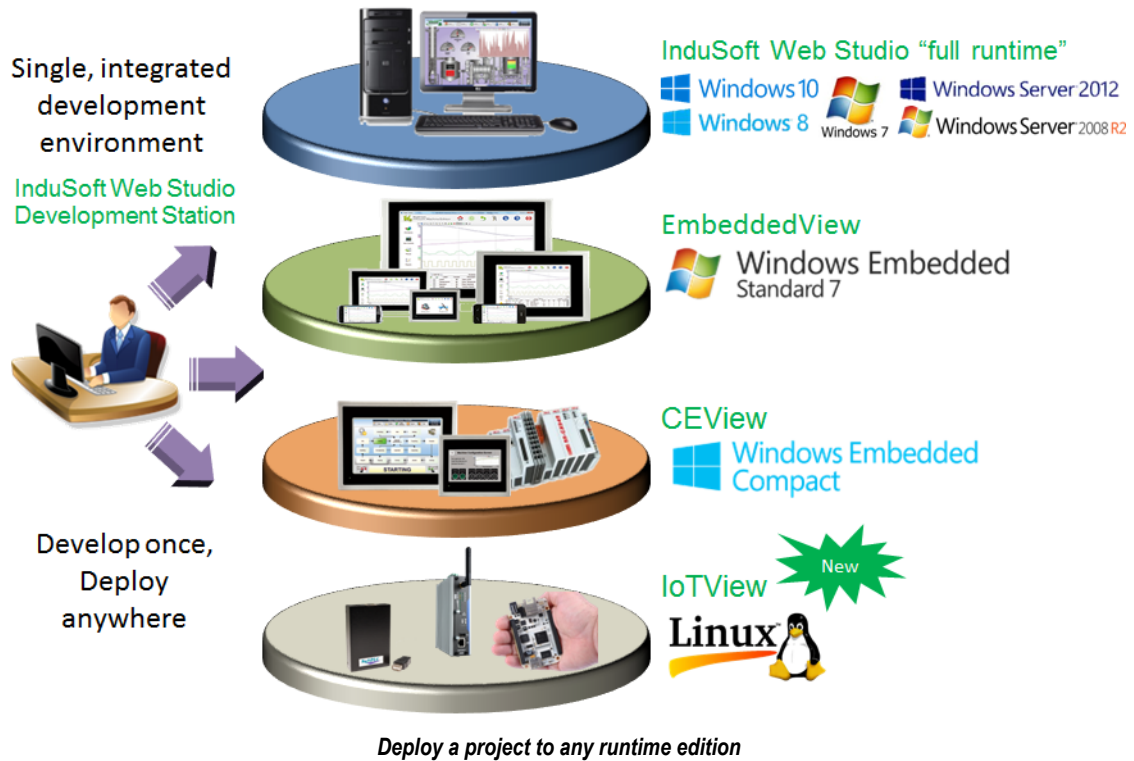
In most cases, the first thing you should do is install the full InduSoft Web Studio 2020 software on your primary workstation, because it not only sets up the project development environment for you, it also unpacks the rest of the components so that they can be installed on other computers and devices.

Separate installers for some components can be found on the InduSoft Web Studio 2020 installation media or downloaded from our website (www.indusoft.com).

Note: We recommend that you use Mobile Access instead of Secure Viewer or Web Thin Client whenever possible. Secure Viewer and Web Thin Client depend on legacy, Windows-only technologies, while Mobile Access allows you to use any HTML5-compatible browser running on any platform as a project viewer. Mobile Access does not yet support all of the features that Secure Viewer and Web Thin Client do, but we are continuing to improve Mobile Access with every new release. For more information, see [Mobile Access](#).

Differences between the runtime editions

You can develop projects once in the Studio development environment and then run them on any of the runtime editions. This section describes the differences between the editions, so that you can decide which to use.



The following table shows the minimum system requirements for each runtime edition.

| Requirement | SCADA | Embedded HMI | Compact HMI | IoT View |
|--|---------------|---------------|---------------|------------|
| Windows | Supported | Not supported | Not supported | Contact us |
| Windows Server | Supported | Not supported | Not supported | Contact us |
| Windows Embedded Standard | Supported | Supported | Not supported | Contact us |
| Windows Embedded Compact | Not supported | Not supported | Supported | Contact us |
| Linux | Not supported | Not supported | Not supported | Supported |
| Available storage (hard drive or non-volatile) | 2 GB or more | 1 GB | 512 MB | 64 MB |
| Available memory (RAM) | 1 GB or more | 512 MB | 256 MB | 32 MB |

IoT View is a platform-agnostic runtime edition, which means it can run on many different devices and operating systems. Only Linux is listed as "Supported" because it is the only operating system for which we have compiled and fully validated IoT View. If you want to run IoT View on another device or operating system, contact your InduSoft Web Studio 2020 software distributor.


For a complete list of system requirements for each runtime edition, see the installation instructions for that edition.

The following table shows the main differences in support for project features between the runtime editions. (The majority of features are fully supported in all editions, so they are not listed.) If you develop a project to include features that are not supported in your chosen edition, you might see unexpected behavior and possibly even serious errors during run time. Some features will be automatically blocked in the project development environment when you select your project's target platform, but you should still be aware of the differences. For more information, see [About target platforms, product types, and target systems](#).

| Feature | SCADA | Embedded HMI | Compact HMI | IoT View |
|---|-----------|---|---|---|
| Run projects developed in Studio | Supported | Supported | Supported | Supported |
| Run as a Windows service | Supported | Not supported | Not supported | Not supported |
| Local project viewer | Supported | Supported | Supported | Not supported |
| Server for Secure Viewer | Supported | Supported | Supported | Not supported |
| Server for Web Thin Client | Supported | Supported | Supported | Not supported |
| Support for Mobile Access | Supported | Supported | Not supported | Supported |
| Email (SMTP client) | Supported | Supported | Supported with limitations ¹ | Not supported |
| Create tags programmatically during run time | Supported | Not supported | Not supported | Not supported |
| Create screens programmatically during run time | Supported | Not supported | Not supported | Not supported |
| Save reports in PDF format | Supported | Not supported | Not supported | Not supported |
| Built-in functions | Supported | Supported with limitations ² | Supported with limitations ² | Supported with limitations ² |
| Tag integration (a.k.a. Shared Tags) | Supported | Supported | Supported | Not supported |
| Security | Supported | Supported | Supported | Supported with limitations ³ |
| Translation | Supported | Supported | Supported | see Mobile Access |
| Procedures | Supported | Supported | Supported | Not supported ⁴ |
| Alarms | Supported | Supported | Supported | Supported with limitations ⁵ |
| Events | Supported | Supported | Supported | Supported with limitations ⁵ |

| Feature | SCADA | Embedded HMI | Compact HMI | IoT View |
|---|-----------|--|--|--|
| Trends | Supported | Supported | Supported | Supported with limitations ⁵ |
| Recipes | Supported | Supported | Supported | Not supported |
| Reports | Supported | Supported | Supported | Not supported |
| Math | Supported | Supported | Supported | Supported |
| Script | Supported | Supported | Supported | Not supported ⁴ |
| Scheduler | Supported | Supported | Supported | Not supported |
| Database/ERP | Supported | Supported | Supported | Supported with limitations ⁶ |
| Drivers | Supported | Supported with limitations ⁷ | Supported with limitations ⁷ | Supported with limitations ⁷ |
| OPC DA Client (Legacy) | Supported | Supported with limitations ⁸ | Supported with limitations ⁸ | Not supported |
| OPC DA Server | Supported | Supported with limitations ⁸ | Supported with limitations ⁸ | Not supported |
| OPC HDA Server | Supported | Not supported | Not supported | Not supported |
| OPC UA Client | Supported | Supported | Supported with limitations ¹ | Supported with limitations |
| OPC UA Server | Supported | Supported | Not supported | Supported |
| OPC XML/DA Client | Supported | Not supported | Not supported | Not supported |
| TCP/IP Client/Server | Supported | Supported | Supported | Not supported |
| Industrial Graphics Screens | Supported | Not supported | Not supported | Not supported |
| Native Screens | Supported | Supported | Supported | Supported |
| Screen Group | Supported | Supported | Supported | Supported |
| Graphic Script | Supported | Supported | Supported | Not supported ⁴ |
| Screen Script | Supported | Supported | Supported | Not supported ⁴ |
| Shapes | Supported | Supported | Supported | Supported |
| Active Objects | Supported | Supported | Supported | Supported with limitations ⁹ |
| Data Objects | Supported | Supported | Supported | see Mobile Access |
| Libraries > Symbols | Supported | Supported with limitations ¹⁰ | Supported with limitations ¹⁰ | Supported with limitations ¹⁰ |
| Libraries > ActiveX Controls | Supported | Supported with limitations ¹¹ | Supported with limitations ¹¹ | Not supported |
| Libraries > .NET Controls | Supported | Not supported | Not supported | Not supported |
| Libraries > Linked Pictures | Supported | Supported with limitations ¹² | Supported with limitations ¹² | see Mobile Access |
| Libraries > Custom Widgets | Supported | Supported | Not supported | see Mobile Access |
| Auto screen scaling | Supported | Not supported ¹³ | Not supported ¹³ | see Mobile Access |
| Fill effects in shapes | Supported | Supported with limitations ¹⁴ | Supported with limitations ¹⁴ | see Mobile Access |
| Ellipse object styles | Supported | Not supported ¹⁵ | Not supported ¹⁵ | see Mobile Access |
| Hint (tooltip) | Supported | Supported | Supported with limitations ¹⁶ | see Mobile Access |
| Command events | Supported | Supported with limitations ¹⁷ | Supported with limitations ¹⁷ | see Mobile Access |
| Rotation animation | Supported | Supported with limitations ¹⁸ | Supported with limitations ¹⁸ | see Mobile Access |
| Trend Control > Fill effects | Supported | Not supported | Not supported | see Mobile Access |
| Trend Control > Export to File | Supported | Not supported | Not supported | see Mobile Access |
| Enhanced graphics (incl. anti-aliasing) | Supported | Not supported | Not supported | see Mobile Access |
| Multi-touch gestures | Supported | Supported | Supported with limitations ¹⁹ | see Mobile Access |

| Feature | SCADA | Embedded HMI | Compact HMI | IoT View |
|------------------------|---|--|--|-------------------------|
| Number of project tags | 150, 300, 1500, 4000, 16K, 32K, 64K, 512K, or 10M | 150, 300, 1500, or 4000 | 150, 300, 1500, or 4000 | 150, 300, 1500, or 4000 |
| Number of thin clients | Unlimited ²⁰ | Unlimited ²⁰ | Unlimited ²⁰ | Unlimited ²⁰ |
| License Server | Supported | Not supported | Not supported | Not supported |
| Hardkey license (USB) | Supported | Supported with limitations ²¹ | Supported with limitations ²¹ | Not supported |

 **Note:** For a comprehensive list of supported features and limitations in IoT View, see [Supported features in the IoT View runtime edition](#).

¹ Encryption (TLS/SSL) is not supported.

² Most functions are supported in all editions, but some specific functions are not supported in this edition. For more information, see [List of available functions](#).

³ Local mode only. Distributed and Domain modes are not supported.

⁴ VBScript is not supported.

⁵ Proprietary format is not supported. Alarm, Event, and Trend history can be saved in Database format only.

⁶ Some Database/ERP functions are supported. Database/ERP worksheets are not supported.

⁷ Most drivers are supported in all editions, but some specific drivers are not supported in this edition. For more information, see the documentation for each driver.

⁸ Single-thread only; multi-thread is not supported.

⁹ Pushbutton, ListBox, and Smart Message objects are not supported. Minor limitations in other objects.

¹⁰ A specific linked symbol is supported as long as all of its component objects and animations are also supported.

¹¹ A specific ActiveX object is supported as long as it is compiled for the target platform.

¹² BMP, JPG, and PNG images are supported, as long as the operating system image on the Windows Embedded device also supports them. For more information, see "Why are my linked pictures no longer displayed on Windows Embedded devices?" in the [FAQ](#).

¹³ Use the **Convert Resolution** command to scale your project screens for other display sizes. For more information, see [Convert your project's display resolution](#).

¹⁴ [Rectangle objects](#) only.

¹⁵ Default style only. Other styles (e.g., Arc, Chord, Ring) are not supported. For more information, see [Ellipse object](#).

¹⁶ The **Hint** tag will be updated, but the actual tooltip will not be displayed on screen. For more information, see [Object Properties dialog box](#).

¹⁷ On Down, While Down, and On Up events only. For more information, see [Command animation](#).

¹⁸ [Closed Polygon objects](#) only.

¹⁹ Zooming in screens, panning in screens, and rotating objects are not supported. For more information, see [About the different types of multi-touch gestures](#).

²⁰ Limited by runtime license, and by external and physical constraints (i.e., hardware and operating system).

²¹ Hardkeys provided by Wibu-Systems are supported. Hardkeys provided by Sentinel (SafeNet) are not supported. For more information, see [About hardkey licenses](#).

Install the full InduSoft Web Studio 2020 software

Install the full InduSoft Web Studio 2020 software on your Windows computer in order to develop IWS projects, or to use the computer as a project runtime server and/or thin client.

To install and run the full InduSoft Web Studio 2020 software, you must have the following:

- A Windows-compatible computer with a standard keyboard, a pointer input (i.e., a mouse, trackpad, or touchscreen), and an SVGA-minimum display;
- One of the following Windows operating systems:
 - Windows:
 - Windows 10, version 1803 or later (including LTSC/LTSB versions)
 - Windows 8.1
 - Windows Server:
 - Windows Server 2019
 - Windows Server 2016
 - Windows Server 2012 R2
 - Windows Embedded Standard:
 - Windows 10 IoT Enterprise (LTSC/LTSB version only)
 - Windows Embedded 8.1 Industry Pro
 - Windows Embedded Standard 7 Service Pack 1
- .NET Framework 3.5 and .NET Framework 4.7.2 (see note below);
- Internet Explorer 11 (not Microsoft Edge);
- Minimum 2 GB available storage (hard drive or non-volatile);
- Minimum 1 GB available memory (RAM); and
- An Ethernet or Wi-Fi network adapter.

We recommend the "Pro" and "Enterprise" editions of Windows, because they include Internet Information Services (IIS) as a pre-installed feature that can be turned on. You can use IIS to make your projects accessible to thin clients and mobile devices. We do not recommend the "Home" and "Education" editions of Windows, because they hide or disable many important features.

Only Windows 10, Windows Server 2016, and Windows Server 2019 are under what Microsoft calls "mainstream support", which means they are actively maintained and additional service packs might be released for them in the future. Windows 8.1 and Windows Server 2012 R2 are under what Microsoft calls "extended support", which means they are no longer actively maintained. For more information, go to: <https://support.microsoft.com/en-us/help/13853/windows-lifecycle-fact-sheet>

You can install the full InduSoft Web Studio 2020 software on a Windows Embedded Standard device, as long as it meets the system requirements listed above, but if you do not plan to develop projects on that device then you should install Embedded HMI instead. For more information, see [Install the project runtime software on a Windows Embedded device](#) on page 21.

Regardless of which version or edition of Windows you are using, you should make sure it is fully updated before you install InduSoft Web Studio 2020. Updating Windows ensures that it has all of the latest security fixes and system components.

The operating system, storage, and memory requirements will necessarily increase for larger projects; the minimum requirements listed above are only for projects of up to 4,000 tags. The following table shows the complete requirements:

| Project Size | Operating System | Storage | Memory |
|------------------|--|----------------|----------------|
| up to 4,000 tags | Windows, Windows Server, Windows Embedded Standard | 2 GB available | 1 GB available |

| Project Size | Operating System | Storage | Memory |
|-----------------------|----------------------------------|----------------|----------------|
| up to 64,000 tags | Windows, Windows Server | 4 GB available | 2 GB available |
| up to 10 million tags | Windows Server only (multi-core) | 8 GB available | 4 GB available |

Your computer needs to meet only the minimum requirements when you first install the software and begin to develop your project, but the requirements will increase as your project grows. Furthermore, every computer or device that you plan to use as a runtime station must meet the same requirements.

The following items are optional but recommended:

- A USB port, to install the software from a USB flash drive.
This is optional because you can also download the installer over the network to your computer.
- A USB port or memory card slot, to be used for hardkey licensing of the software.
This is optional because softkey licensing is also available.
- Serial COM ports and adapters, to be used for direct communication with PLCs and other devices.
This is optional because many newer device protocols use Ethernet communication (i.e., TCP/IP or UDP/IP) instead of serial communication.
- Internet Information Services (IIS) installed and turned on; for more information, see the description of the **Mobile Access Runtime** option below.
This is optional because you may choose not to install the Mobile Access Runtime feature at this time, as part of the full InduSoft Web Studio 2020 software. You can install it at a later time, for either IIS or CGI.

Finally, you must have Administrator privileges on the computer in order to install any software.

 **Note:**

You must have both .NET Framework 3.5 and .NET Framework 4.7.2 installed and turned on in order to use all of the features of InduSoft Web Studio 2020.

If Windows is fully updated, as described above, then the latest versions of .NET Framework should be installed. They might not be turned on, however, so use the *Windows Features* control panel to confirm that they are.

In some cases, it might not be possible to keep Windows fully updated through normal means. (For example, if your computer is on a private or secure network, then it might not be able to contact the Windows Update service.) The InduSoft Web Studio 2020 software installer will check for both versions of .NET Framework, and if it does not find them, it will attempt to install them for you. Depending on your computer's security settings, however, the installation(s) might fail without notice. Therefore, if you experience issues later while trying to use InduSoft Web Studio 2020 — in particular, while trying to communicate with external databases — use the **Windows Features** control panel to confirm that both versions of .NET Framework are installed and turned on.

In Windows Server 2012 R2, .NET Framework 3.5 is not pre-installed and it cannot be installed by the InduSoft Web Studio 2020 software installer. You must use the Server Manager tool to install it. For more information, see [Install .NET Framework 3.5 in Windows Server 2012 R2](#).

For more information about .NET Framework, go to: <https://docs.microsoft.com/en-us/dotnet/framework/index>

To install the full InduSoft Web Studio 2020 software:

1. Close all other running programs, if possible.
We recommend you do this because those programs can use a significant amount of system resources and therefore cause this installation to take longer to finish. Windows services (e.g., Windows Defender, Windows Update) can have the same effect, but we do not recommend you stop or disable those services.
2. Do one of the following:
 - Download the zipped installer to your computer, either from our website (www.indusoft.com) or from another location on your network where you have previously saved it. Extract the files, open the resulting folder, and then locate and run the setup program (setup.exe).

- Insert the installation drive into your USB port. If it does not autorun, locate and open the Welcome page (`InduSoft.htm`). When the page is opened in your browser, click **Product Installation** and then follow the instructions.

The installation wizard runs and asks you to select a language for the installation.

3. Select a language from the list, and then click **OK**.
This selection determines the language of the user interface for both the installation wizard and the project development environment. You can change the language for the project development environment later, after the software has been installed.
The wizard prepares for installation. During this step, it automatically installs SafeNet's Sentinel drivers (a part of the software licensing mechanism), .NET Framework 3.5, and .NET Framework 4.7.2, if necessary.
4. On the **Welcome** page of the wizard, click **Next** to proceed with the installation.
5. On the **License Agreement** page, click **Yes** to accept the agreement and proceed, or click **No** to refuse the agreement and exit the wizard.
6. On the **Customer Information** page, type your user name and company name, and then click **Next**.
7. On the **Choose Destination Location** page, select the folder where the software should be installed, and then click **Next**.

By default, the software will be installed at the following location:


`C:\Program Files (x86)\InduSoft Web Studio 2020\`


8. On the **Select Features** page, select the specific features and components that you want to install, and then click **Next**.

| Feature | Description |
|--|---|
| Program Files | The main program files for the project development environment, the project runtime software for Windows and Windows Server, and the thin client software for viewing project screens. You cannot deselect this feature. |
| BDE for PanelMate™ Import Wizard | Borland Database Engine (BDE), which is required to import a PanelMate Plus or PanelMate Power Pro program into a new project. This feature is not selected by default, because it is used only in some cases. |
| Custom Widget Framework | Additional software that is required to develop HTML5-based widgets and then use them in project screens. You cannot deselect this feature. |
| Demo Projects | Premade projects that demonstrate the capabilities of the InduSoft Web Studio 2020 software. |
| Hardkey Support | Additional drivers that support the use of hardkey licenses. |
| Industrial Graphics | The Industrial Graphics editor and symbol library, which works as a companion to our native graphics tools. |
| Mobile Access Runtime | Add-on software for Internet Information Services (IIS) that lets you use any HTML5-compatible browser to view your project screens. If you select this feature, the installer will try to confirm that IIS is turned on in Windows, and if it is, the add-on software will be installed. Regardless of whether you select this feature for installation, a separate Mobile Access Runtime software installer (<code>MobileAccessSetup.exe</code>) will be copied to your InduSoft Web Studio 2020 program folder. You can run that installer at a later time. |
| OPC Components | Additional components that are required for communication with other OPC-compatible devices. This includes OPC DA (a.k.a. OPC Classic), OPC XML-DA, and OPC UA. |
| PDF Printing | Additional software that lets projects save run-time reports as PDF files. |
| Additional Runtimes > IoT View | This is the platform-agnostic project runtime software for Linux and other operating systems. |

| Feature | Description |
|---|--|
| | Selecting this feature will not actually install IoT View on your computer at this time. It will only copy the installation files to your InduSoft Web Studio 2020 program folder, so that you can install IoT View on another computer at a later time. |
| Additional Runtimes > Windows Embedded Standard | Also called Embedded HMI, this is the project runtime software for Windows Embedded Standard computers. Selecting this feature will not actually install Embedded HMI on your computer at this time. It will only copy the installation files to your InduSoft Web Studio 2020 program folder, so that you can install Embedded HMI on a Windows Embedded Standard computer at a later time. |
| Additional Runtimes > Windows Embedded Compact | Also called Compact HMI, this is the project runtime software for Windows Embedded Compact devices. Check the manufacturer's documentation for your device to see which processor it uses. Selecting this feature will not actually install Compact HMI on your computer at this time. It will only copy the installation files to your InduSoft Web Studio 2020 program folder, so that you can install Compact HMI on a Windows Embedded Compact device at a later time. |
| Security System Device Driver | An additional keyboard driver that helps to enforce security during project run time. |
| Symbol Library | A large library of premade but customizable screen objects such as pushbuttons, toggle switches, gauges, dials, indicator lights, and so on. |
| Historian | Additional software that is required to save historical data (e.g., from Trend worksheets) to AVEVA Historian or AVEVA Insight. If you want to use this feature in your project, you must have .NET Framework 4.7.2 (or later) installed and turned on. |

9. On the **Ready To Install** page, click **Install**.

 **Note:** You might receive the following error message during installation: "Error 1628: Failed to complete script based install." For more information about this error and how to resolve it, go to: https://flexeracommunity.force.com/customer/articles/en_US/ERRDOC/Error-1628-Failed-To-Complete-Script-Based-Install

 **Note:** If you try to install an earlier version of this software on a computer that already has a later version installed, you might receive the following message during installation: "Version x.x.x.x of CodeMeter Development Kit is already installed. Downgrading to Version x.x.x.x is not possible, installation will be aborted." CodeMeter is supplemental software used by InduSoft Web Studio 2020 to manage hardkey licenses. To resolve this issue, you must use Task Manager in Windows to stop CodeMeter Runtime Server (CodeMeter.exe) before you install the earlier version of the software.

The software is installed, and then when the installation is finished, the last page of the wizard is displayed.

10. Click **Finish** to close the installation wizard.

When you have finished the installation, you can find the software in your Windows Start menu at: **Start > InduSoft Web Studio 2020**

The software includes the following "apps" (applications):

InduSoft Web Studio 2020 Studio

The project development environment and/or the project runtime for Windows. Its capabilities are determined by your software license.

InduSoft Web Studio 2020 Help Manual

A complete technical reference and user guide for all of the InduSoft Web Studio 2020 software.

InduSoft Web Studio 2020 Quick Start Guide

A brief guide to installing and using the project development environment, including a tutorial for developing a simple project.

InduSoft Web Studio 2020 Register

A utility program that manages your InduSoft Web Studio 2020 software license.

InduSoft Web Studio 2020 Release Notes

A list of changes in the InduSoft Web Studio 2020 software.

InduSoft Web Studio 2020 Remote Agent

A utility program that allows other stations to remotely manage InduSoft Web Studio 2020 as a project runtime.

InduSoft Web Studio 2020 StartUp

A shortcut that automatically starts the project runtime and then runs the most recent project.

There should also be a shortcut icon on your desktop.

To run the software, do one of the following:

- Double-click the shortcut icon on your desktop; or
- Click **Start > InduSoft Web Studio 2020 > InduSoft Web Studio 2020 Studio**.

If the installation failed for any reason, you can use System Restore to restore the computer to the restore point that was created at the beginning of the installation. For more information about System Restore, go to: <https://support.microsoft.com/help/17127/windows-back-up-restore>

Install the project runtime software on a Windows Embedded device

Install the project runtime software on a Windows Embedded device in order to download and run projects on that device. The runtime edition for Windows Embedded Standard computers is called Embedded HMI. The runtime edition for Windows Embedded Compact devices is called Compact HMI.

If the project runtime software is preinstalled on your Windows Embedded device, you may skip this entire procedure. Many device manufacturers preinstall the software as part of a complete automation solution.

Before you begin this procedure, you must have already installed the full InduSoft Web Studio 2020 software on your computer, because the InduSoft Web Studio 2020 program folder contains all of the redistributable files. For more information, see [Install the full InduSoft Web Studio 2020 software](#) on page 16.

The following items are required to install and run Embedded HMI or Compact HMI:

- A Windows Embedded-compatible computer or device (hereafter called the "target station");
- One of the following Windows Embedded operating systems:
 - Windows Embedded Standard:
 - Windows 10 IoT Enterprise (LTSC/LTSB version only)
 - Windows Embedded 8.1 Industry Pro
 - Windows Embedded Standard 7 Service Pack 1
 - Windows Embedded Compact:
 - Windows Embedded Compact 7
- Available storage (i.e., hard drive or non-volatile memory):
 - 1 GB for Embedded HMI
 - 512 MB for Compact HMI

More storage might be required, depending on the size of your project.

- Available memory (i.e., RAM or volatile memory):
 - 512 MB for Embedded HMI
 - 256 MB for Compact HMI

More memory might be required, depending on the size of your project.

- An Ethernet or Wi-Fi network adapter.

The following items are optional but recommended:

- A USB port; and
- Serial COM ports and adapters, to be used for serial communication with PLCs and other devices.

This is optional because many device protocols now use Ethernet communication (TCP or UDP) instead of serial communication.

Installing the project runtime software is actually a two-part procedure. First, you will copy a utility program called Remote Agent to the target station; it lets you establish a connection between the project development environment and the target station. And then, through that connection, you will install the rest of the runtime files.

To install the project runtime software on a Windows Embedded device:

1. Turn on the target station, and then make sure it is connected to the same network as your computer. If Remote Agent is already installed on the target station and it runs automatically on startup, you can skip the next step.
2. Copy Remote Agent to the target station, and then run it:
 - a) Locate the correct version of the Remote Agent program file (`CEServer.exe`) for the target station. All versions are stored in your InduSoft Web Studio 2020 program folder.
Remote Agent for Windows Embedded Standard is located at:

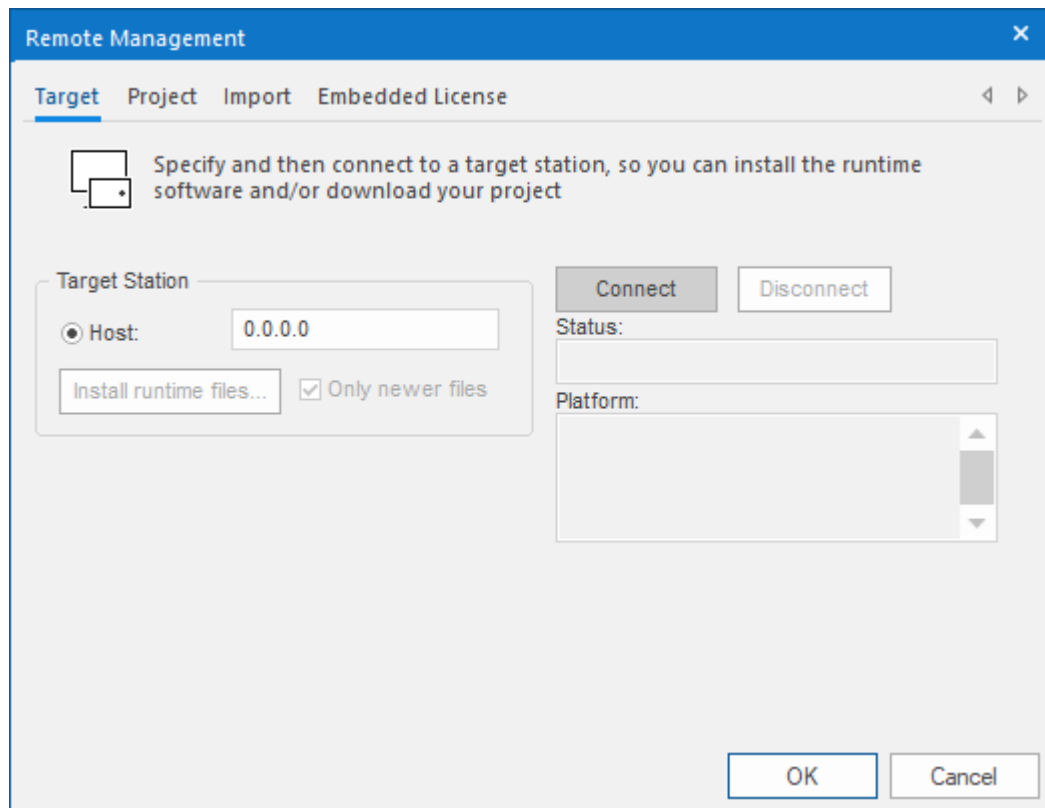
C:\Program Files (x86)\InduSoft Web Studio 2020\Redist\WinEmbedded\Bin\CEServer.exe

Remote Agent for Windows Embedded Compact is located at:

C:\Program Files (x86)\InduSoft Web Studio 2020\Redist\WinCE 5.0\processor\Bin\CEServer.exe

...where *processor* is the type of processor used by the target station. For more information, see the manufacturer's documentation.

- b) Copy the Remote Agent program file to the target station, either by downloading it over the network connection or by transferring it on a removable storage device (e.g., a USB flash drive). You can save the file anywhere on the target station, as long as it is in persistent storage but not in the root folder.
 - c) Configure Remote Agent to run automatically on startup.
On most Windows Embedded Compact devices, you can do this by creating a shortcut to it in \Windows\Startup. If this does not work on the target station, see the manufacturer's documentation.
 - d) Open Remote Agent, or restart the target station so that Remote Agent runs automatically.
The *Remote Agent* window is displayed.
 - e) In the *Remote Agent* window, note the host name or IP address of the target station.
 - f) Do not close the *Remote Agent* window.
Remote Agent needs to be running in order for you to be able to connect to it.
3. Use the Remote Management tool to connect to the target station:
 - a) On your computer, open InduSoft Web Studio 2020.
 - b) On the **Home** tab of the ribbon, in the **Remote Management** group, click **Connect**.
The *Remote Management* dialog box is displayed.



- c) Under **Target Station**, in the **Host** box, type the host name or IP address of the target station.

- d) When the **Connect** button becomes active, click it to connect to the target station.

When you are successfully connected to the target station, the connection status is shown in the **Status** box and the device specifications are shown in the **Platform** box.

If you cannot connect to the target station, check both the connection settings and the physical network connections. In particular, make sure port 4322 is open on any firewalls between your computer and the target station.

4. Install the rest of the project runtime software on the target station: in the *Remote Management* dialog box, click **Install runtime files**.

The **Only newer files** option is selected by default in order to minimize the time needed to install the files. If you want to reinstall all of the files — in other words, if you want to do a "clean install" on the target station — then clear the **Only newer files** option before you click **Install runtime files**.

When the installation is finished, the updated status of the target station is displayed in the **Status** box.

Once the project runtime software is installed on the target station, you can download and run projects on it.

Keep in mind that some run-time features are not supported on the **Embedded** target platform, which includes Embedded HMI and Compact HMI. Most of those unsupported features are automatically disabled when you change your project's target platform from **Windows** to **Embedded**, but some are not, so if you develop a project that uses those features and then try to run it on the target station, you might see unexpected behavior and possibly even serious errors during run time. You should always be aware of the differences between runtime editions as you develop your project. For more information, see [About the InduSoft Web Studio 2020 software components](#) on page 11.

Also, if you develop a project that uses the database gateway to connect to an external database (including Wonderware Historian or AVEVA Insight) and then try to run that project on the target station, you might need to manually install the database gateway. For more information, see [Manually install Studio Database Gateway](#).

Execution Modes

SCADA, Embedded HMI, and Compact HMI support the following execution modes:


| Execution Mode | SCADA | Embedded HMI / Compact HMI |
|------------------------------------|-----------|----------------------------|
| Evaluation Mode | Supported | Not supported |
| Demo Mode | Supported | Supported |
| Licensed for Engineering Only | Supported | Not supported |
| Licensed for Runtime Only | Supported | Supported |
| Licensed for Engineering + Runtime | Supported | Not supported |

Evaluation Mode

Enables all of the product's engineering and runtime features.

The first time you install SCADA on a computer, the product runs for forty (40) hours in Evaluation Mode. This evaluation period includes any time you run a product module (engineering or runtime). You can use this evaluation period continuously or not; for example, 10 hours a day for 4 days, or 5 hours a day for 8 days, or 10 hours a day for 3 days plus 5 hours a day for 2 days, and so on.

After running for 40 hours in the Evaluation Mode, the evaluation period ends and the program automatically converts to Demo Mode until you apply a valid license. You cannot reactivate Evaluation Mode, even if you reinstall the software on your computer.

 **Note:** Each version of SCADA has an evaluation period that is independent of every other version. For example, if an earlier version is running in Demo Mode because its evaluation period has expired, and then you install the latest version on the same computer, the latest version will begin its own 40-hour evaluation period and the earlier version will continue to run in Demo Mode.

Demo Mode

Allows you to download projects to remote stations and to run projects for testing or demonstration purposes. You can execute runtime tasks and use the debugging tools (*Watch* and *LogWin*), but they shut down automatically after running for two hours continuously. You can restart the Demo Mode again and run for another two hours, and so on.

You cannot create or modify screens, worksheets, or project settings in Demo Mode.

Licensed for Engineering Only

Enables all development options for an unlimited time.

This mode also allows you to continuously run the runtime tasks and debugging tools (*Watch* window, *Output* window, and *LogWin* module) for 72 hours. After that period, these tasks shut down, but you can restart them and run for another 72 hours, and so on. You can use this license for development and testing only.


Licensed for Runtime Only

Enables all runtime tasks and debugging tools (*Watch* window, *Output* window, and *LogWin* module) for unlimited time, but you cannot create or modify screens and/or worksheets.

The menu options available in Runtime Only mode are the same as the options listed for Demo Mode (see previous table).

Licensed for Engineering + Runtime

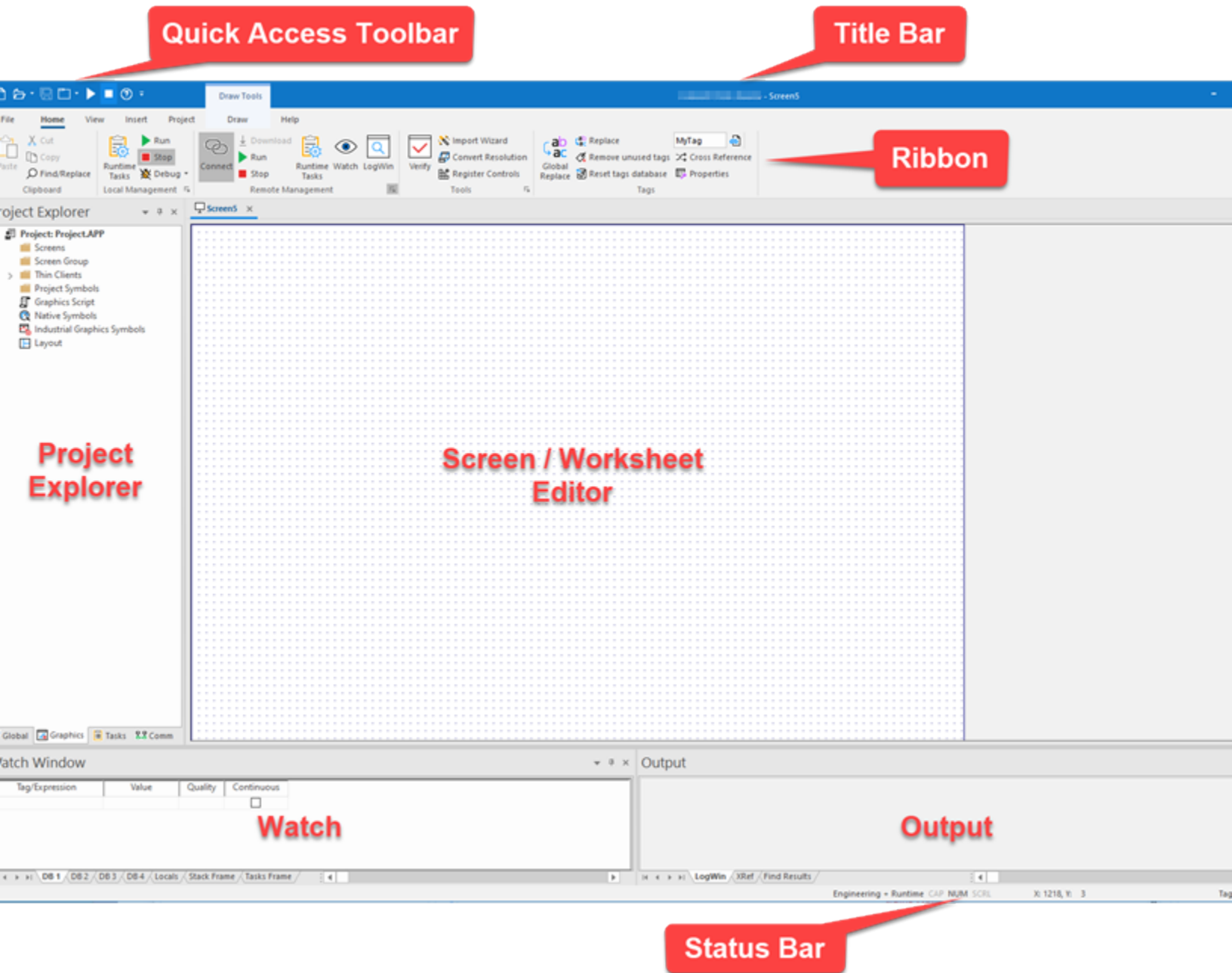
Enables all development options, runtime tasks, and debugging tools (*Watch* window, *Output* window, and *LogWin* module) for an unlimited time.

 **Note:** The Remote Management tool is always available, regardless of the execution mode, so that you can upload files from or download files to remote stations.

To see which execution mode you are currently running, click **About** on the Help tab of the ribbon; the [About dialog](#) shows the execution mode, including the time remaining if you are in Evaluation Mode.

The Development Environment

InduSoft Web Studio 2020 incorporates a modern, Ribbon-based Windows interface to provide an integrated and user-friendly project development environment.



Title bar


The Title Bar located along the top of the project development environment displays the full name of the Studio application (e.g., InduSoft Web Studio 2020), followed by the name of the active screen or worksheet (if any).



Example of Title Bar

The Title Bar also provides the following buttons (from left to right):

- **Minimize** button: Click to minimize the development environment window to the Taskbar.
- **Restore Down / Maximize**: Click to toggle the development environment window between two sizes:
 - **Restore Down** button reduces the window to its original (default) size.
 - **Maximize** button enlarges the window to fill your computer screen.
- **Close** button: Click to save the database and then close the development environment. If you modified any screens or worksheets, the application prompts you to save your work. This button's function is similar to clicking **Exit Application** on the File menu.

 **Note:** Closing the project development environment does not close either the project runtime or the project viewer, if they are running.

Quick Access Toolbar

The Quick Access Toolbar is a customizable toolbar that contains a set of commands that are independent of the ribbon tab that is currently displayed.

Move the Quick Access Toolbar

The Quick Access Toolbar can be located in one of two places:

- Upper-left corner, above the menu bar (default location); or
- Below the ribbon, where it can run the full length of the application window.

If you don't want the Quick Access Toolbar to be displayed in its current location, you can move it to the other location:


1. Click **Customize Quick Access Toolbar** .
2. In the list, click **Show Below Ribbon** or **Show Above Ribbon**.

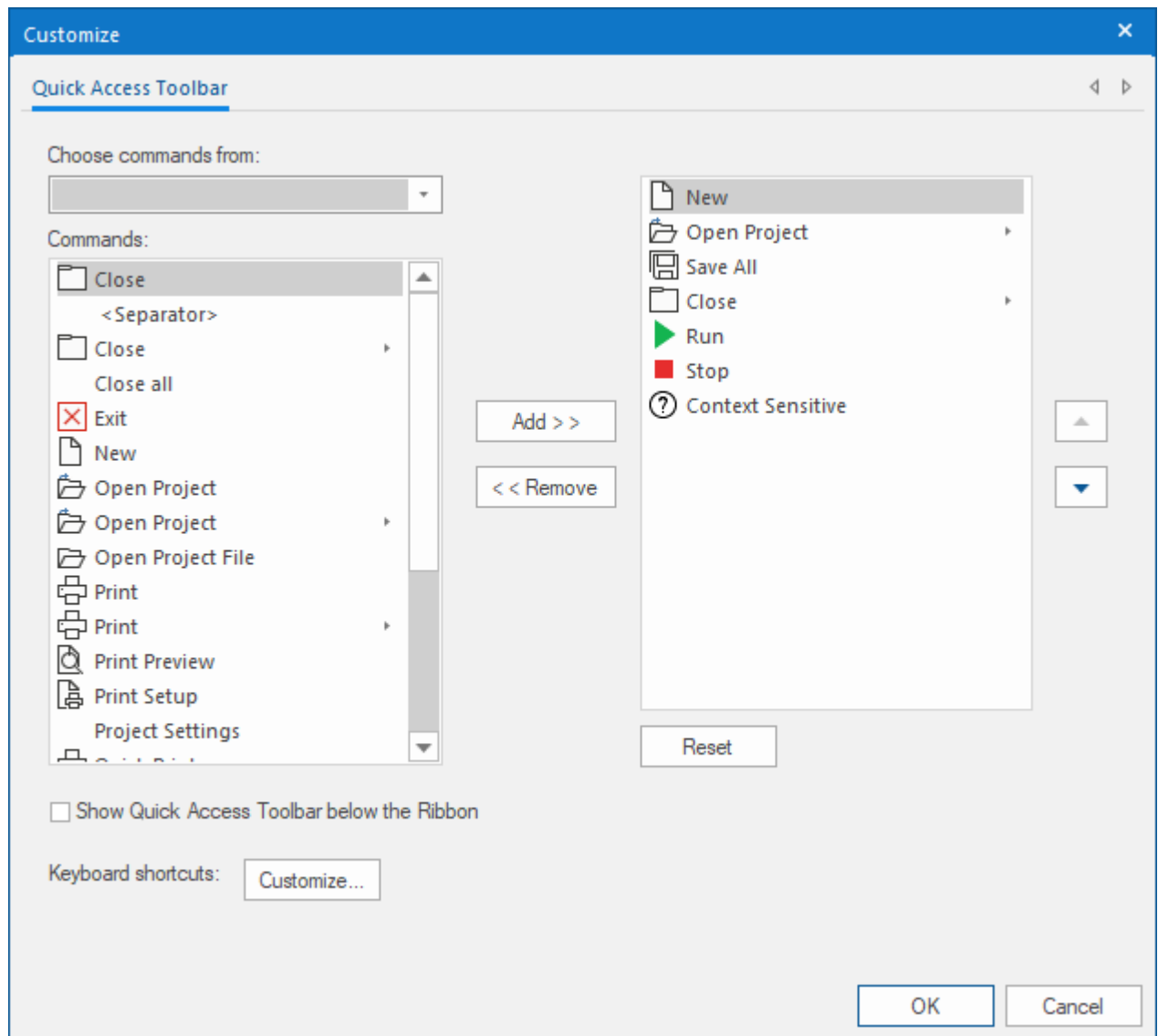
Add a command to the Quick Access Toolbar

You can add a command to the Quick Access Toolbar directly from commands that are displayed on the ribbon:

1. On the ribbon, click the appropriate tab or group to display the command that you want to add to the Quick Access Toolbar.
2. Right-click the command, and then click **Add to Quick Access Toolbar** on the shortcut menu.

You can also add and remove commands — as well as reset the toolbar to its default — using the *Customize* dialog:

1. Click **Customize Quick Access Toolbar** .
2. In the list, click **More Commands**. The *Customize* dialog is displayed.



3. In the **Choose commands from** menu, select the appropriate Ribbon tab. The commands from that tab are displayed in the **Commands** list.
4. In the **Commands** list, select the command that you want to add to the Quick Access Toolbar.
5. Click **Add**.

Only commands can be added to the Quick Access Toolbar. The contents of most lists, such as indent and spacing values and individual styles, which also appear on the ribbon, cannot be added to the Quick Access Toolbar.

File menu

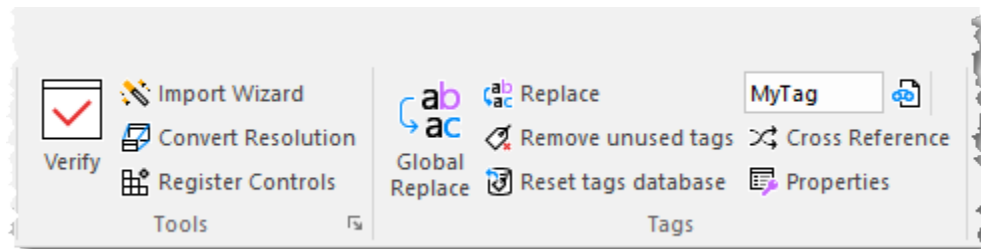
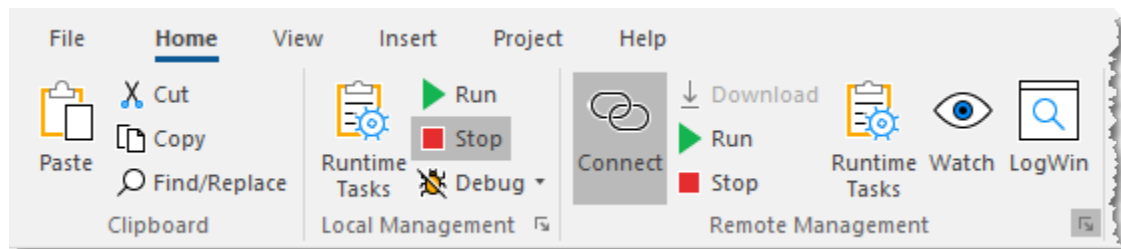
When you click the **File** tab of the ribbon, it opens a menu of standard Windows application commands like New, Open, Save, Print, and Close.

Ribbon

The new ribbon combines the numerous menus and toolbars from the previous versions of this software into a single, user-friendly interface. Almost all application commands are now on the ribbon, organized into tabs and groups according to general usage.

Home tab

The **Home** tab of the ribbon is used to manage your project within the development environment.

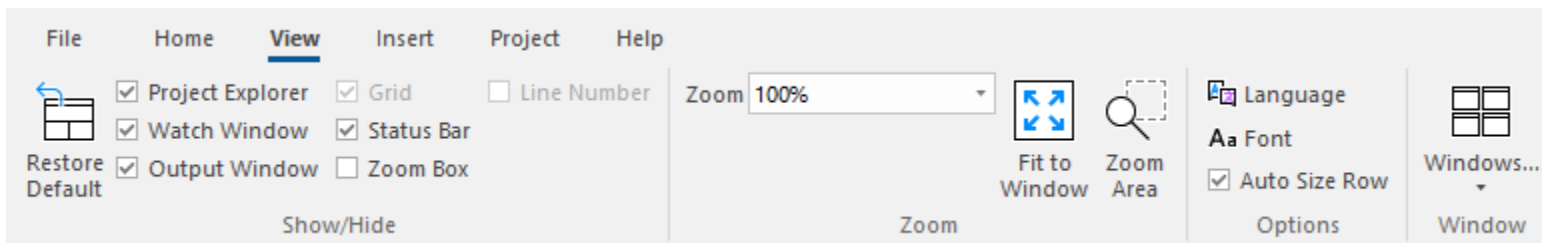


The tools are organized into the following groups:

- **Clipboard:** [Cut](#), [copy](#), [paste](#), and [find](#) items in project screens and task worksheets.
- **Local Management:** [Run](#) and [stop](#) the project on the local station (i.e., where the development application is installed), as well as manage the [execution tasks](#). You can also run a project in Debug mode, for [debugging VBScript](#).
- **Remote Management:** Connect to a remote station so that you can download the project to it, and then run, stop, and troubleshoot the project on that station. For more information, see [Remote Management](#).
- **Tools:** Miscellaneous tools to [verify the project](#), [import tags](#) from other projects, [convert screen resolutions](#), and [register ActiveX and .NET controls](#).
- **Tags:** [Manipulate tags and tag properties](#) in the project database.

View tab

The **View** tab of the ribbon is used to customize the look of the development environment itself.

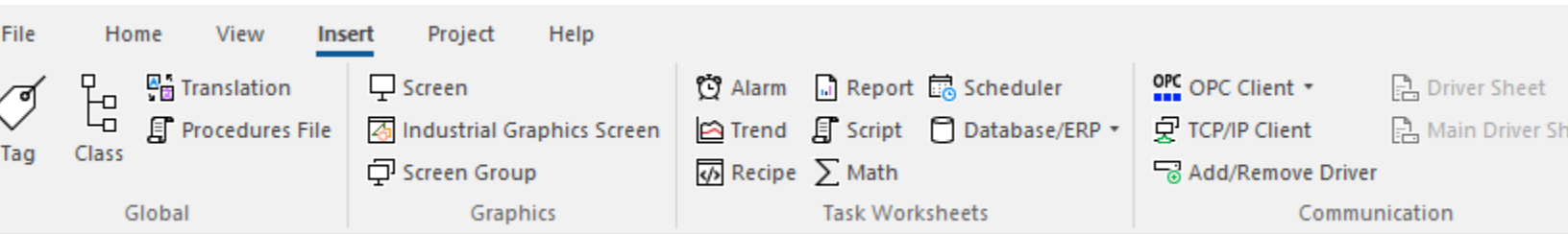


The tools are organized into the following groups:

- **Show/Hide:** Show and hide the different parts of the development environment, as well as restore the default layout.
- **Zoom:** [Zoom](#) in and out of the screen editor.
- **Options:** Change the [language](#) and [font](#) used in the development environment.
- **Window:** [Arrange the windows](#) in the development environment.

Insert tab

The **Insert** tab of the ribbon is used to insert new tags, screens, worksheets, and other components into your project.

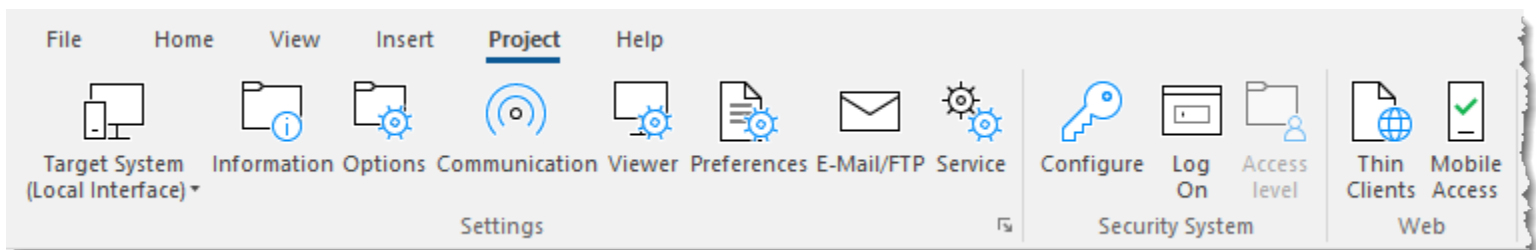


The tools are organized into the following groups:

- **Global:** Insert [tags](#), [classes](#), [translations](#), and [procedures](#) into the [Global tab](#) of the Project Explorer.
- **Graphics:** Insert [screens](#) and [screen groups](#) into the [Graphics tab](#) of the Project Explorer.
- **Task Worksheets:** Insert [task worksheets](#) into the [Tasks tab](#) of the Project Explorer.
- **Communication:** Insert [server configurations and communication worksheets](#) into the [Comm tab](#) of the Project Explorer.

Project tab

The **Project** tab of the ribbon is used to configure your project settings.

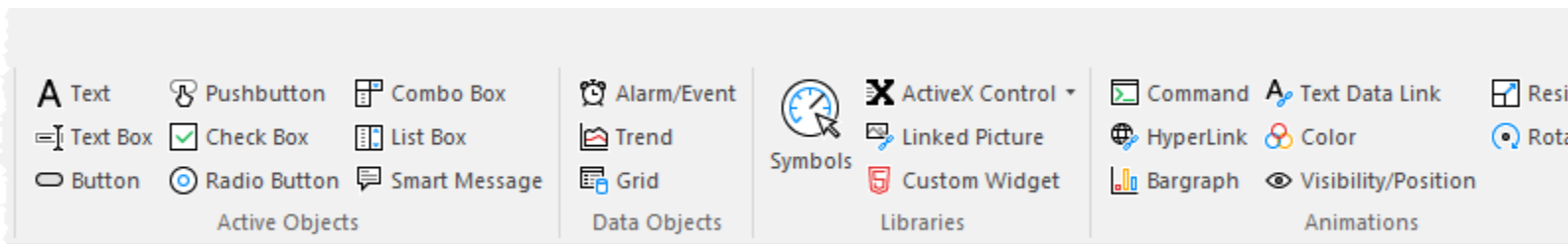
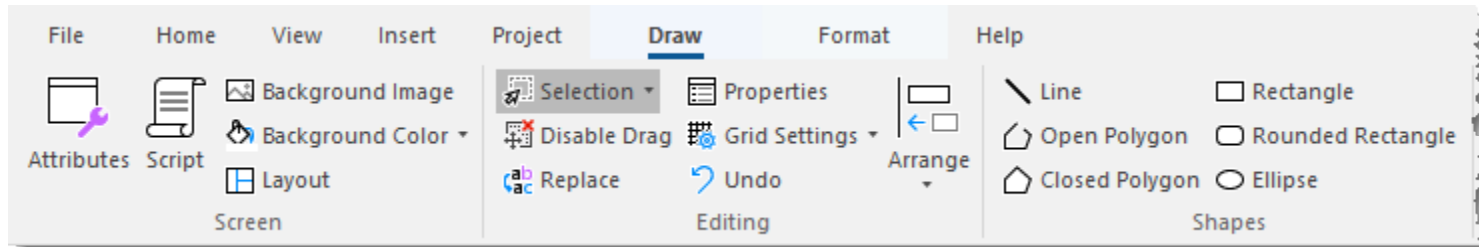



The tools are organized into the following groups:

- **Settings:** Configure the general [project settings](#) or set the project to [run as a Windows service](#).
- **Security System:** Enable and configure the [project security system](#).
- **Web:** Configure the project to accept connections from a variety of [thin clients](#).

Draw tab

The **Draw** tab of the ribbon is used to draw objects in project screens.



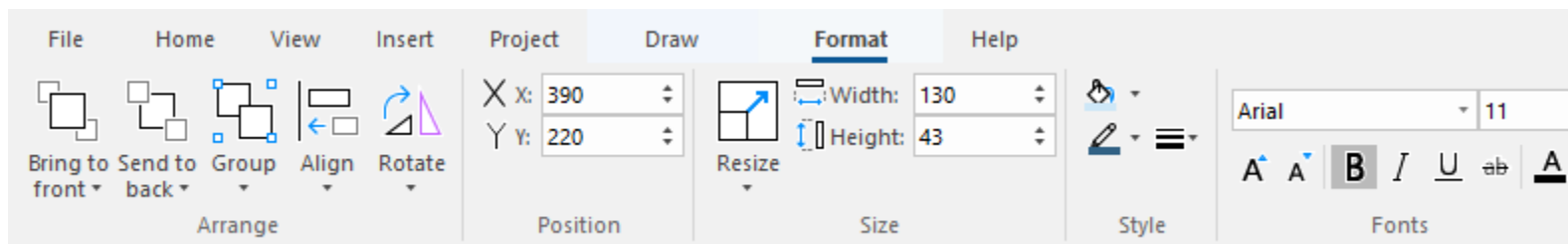
 **Note:** This tab is available only when you have a project screen open for editing.


The tools are organized into the following groups:

- **Screen:** Configure settings for the project screen itself, such as its [attributes](#), [script](#), and [background color or image](#).
- **Editing:** [Select and edit objects](#) in the project screen.
- **Shapes:** Draw [static lines and shapes](#).
- **Active Objects:** Draw [active objects](#), like buttons and check boxes.
- **Data Objects:** Draw [objects that display historical data](#), like alarms, events, and trends.
- **Libraries:** Select from libraries of premade objects, such as [symbols](#), [ActiveX](#) and [.NET controls](#), [external image files](#), and HTML5-based [custom widgets](#).
- **Animations:** Apply [animations](#) to other screen objects.

Format tab

The **Format** tab of the ribbon is used to format and arrange objects in a project screen.



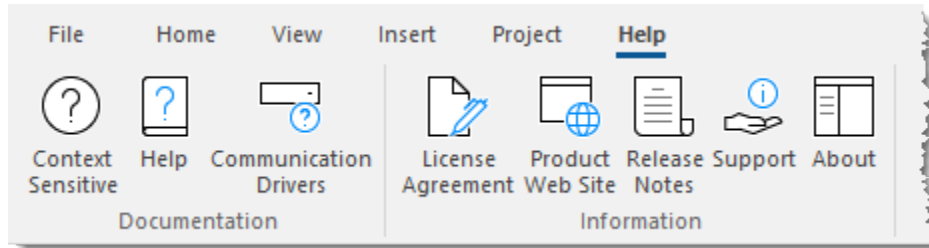
 **Note:** This tab is available only when you've selected one or more objects in a project screen.

The tools are organized into the following groups:

- **Arrange:** Arrange objects in a project screen, including [bring to front and send to back](#), [group](#), [align](#), and [rotate](#).
- **Position:** Precisely adjust the [position](#) of a screen object in a project screen.
- **Size:** Precisely adjust the [size](#) of a screen object.
- **Style:** Change the [fill](#) and [line color](#) of a screen object.
- **Fonts:** Change the [caption font](#) of a screen object.

Help tab

The **Help** tab of the ribbon provides additional help with using the software.



The tools are organized into the following groups:

- **Documentation:** Access the documentation for the development application, including this [help file / technical reference](#) and notes for the individual [communication drivers](#).
- **Information:** Access other information about InduSoft Web Studio 2020, including the [license agreement](#), [product website](#), and [release notes](#), as well as [support](#) details that make it easier for us to assist you.

Project Explorer

The Project Explorer organizes all of the screens, worksheets, and other items that comprise your project and presents them in an expandable tree-view.

To open a folder and view its contents, either click the Expand icon ▸ to the left of the folder or double-click the folder itself.

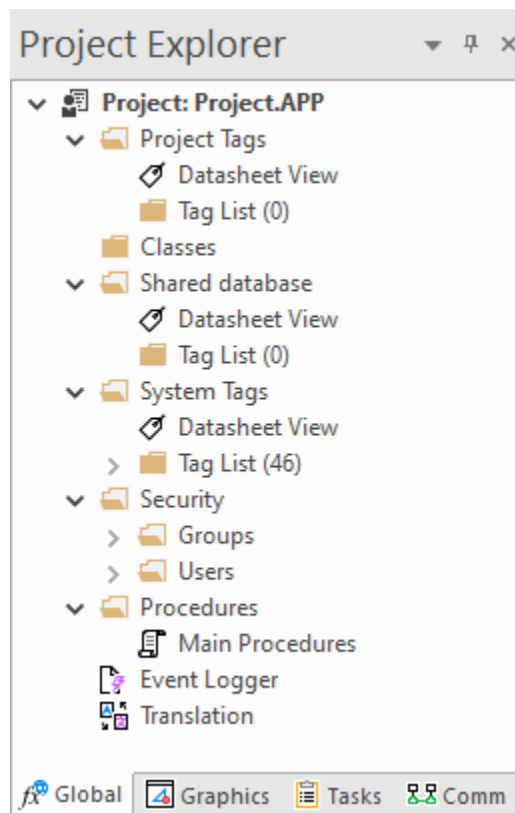
To close a folder, click the Collapse icon ◀ to the left of the folder.

If you right-click any item in the Project Explorer, then a shortcut menu will appear with contextual commands for that item.

There are four main sections, or tabs, in the Project Explorer: Global, Graphics, Tasks, and Comm.

Global tab

The Global tab of the Project Explorer contains the project tags database, as well as other features that apply to the entire project such as the security system, VBScript procedures, and UI translation.



Global tab of the Project Explorer

The folders on the Global tab are described in the following sections:

Project Tags

The project tags database contains all of the data tags that you create during project development, such as screen tags (e.g., `button1_state`) or tags that read from / write to connected devices.

Classes

Classes are compound tags that you can create to associate a set of values, rather than a single value, with an object. For example, where you may normally create separate tags for a tank's pressure, its temperature, and its fill level, you can instead create a "tank" class that includes all three.

Shared Database

The shared database contains tags that were created in another program and then imported into or integrated with your project.

System Tags

System tags are predefined values such as the date, the time, the name of the current user, and so on. You can use these values to develop supervisory functions and housekeeping routines.

All system tags are read-only, which means you cannot add, edit, or remove these tags from the database.

Security

If you choose to enable it, you can use the project security system to control who may log on to your project and what they may do during runtime.

Procedures

Procedures are VBScript functions and sub-routines that can be called by any other script in your project.

Event Logger

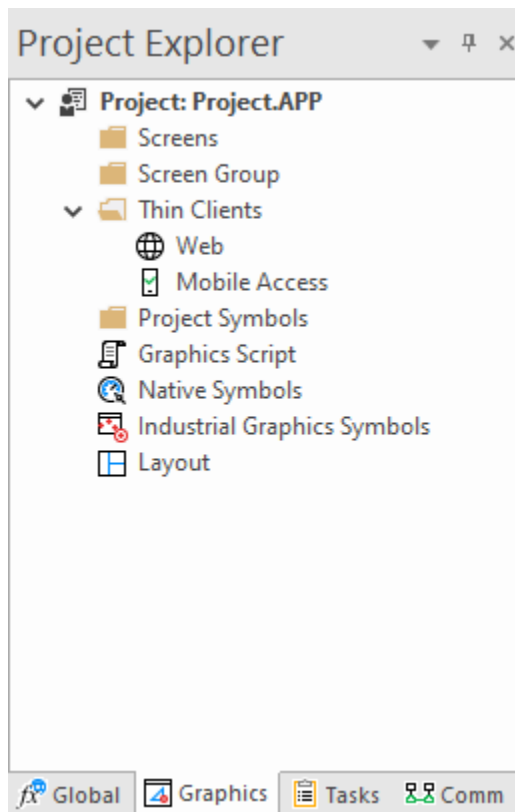
The event logger saves important runtime messages and task results to an external database.

Translation

You can use the translation table to develop a multilingual user interface (MUI) for your project.

Graphics tab

The Graphics tab of the Project Explorer contains all of the screens, screen groups, and symbols in your project.



Graphics tab of the Project Explorer

The folders on the Graphics tab are described in the following sections:

Screens

You create screens to provide a graphical interface for your project. Each screen can contain many buttons, sliders, dials, indicators, graphs, and so on.

Screen Groups

You can combine individual screens into screen groups, so that they all open together at the same time.

Thin Clients

You can deploy your project as a web application to be accessed by thin clients such as desktop web browsers, tablets, and smartphones. You can even deploy different versions of your project with different levels of functionality for each type of client.

Project Symbols

This folder contains all of the custom symbols that you create for your project. A symbol is a group of interconnected screen objects that work together to perform a single function — for example, lines, rectangles, and text fragments that have been arranged to make a slider control.

Graphics Script

You can use this worksheet to define VBScript sub-routines that are called only when the graphics module starts (i.e., when a client station connects to the server and displays the graphical interface), while it is running, and when it ends.

Native Symbols

This folder is a library of the symbols that are created with the native graphics tools in Studio. It contains not only the custom symbols that you create (see Project Symbols above), but also a large selection of premade symbols that are installed with Studio.

Industrial Graphics Symbols

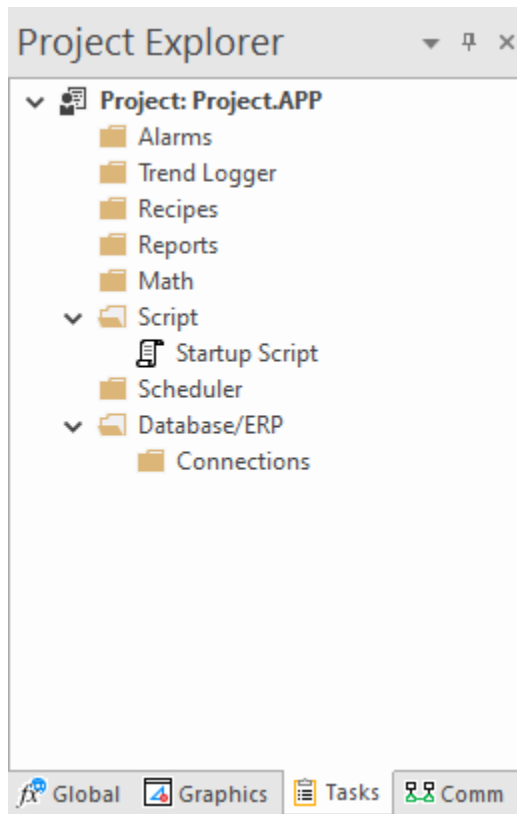
This folder is a library of the symbols that are created with the Industrial Graphics editor, which works as a companion to the native graphics tools in Studio.

Layout

The layout editor displays all of the screens that are currently open for editing. You can use it to visualize how the screens are arranged together and reuse screens in multiple layouts — for example, to create a common navigation bar across your entire project.

Tasks tab

The Tasks tab of the Project Explorer organizes the worksheets that are processed as background tasks (i.e., server-based maintenance tasks that are not directly related to screen operations or device I/O) during project runtime.



Tasks tab of the Project Explorer

The folders on the Tasks tab are described in the following sections:

Alarms

You can use Alarm worksheets to define when alarms are triggered, how they must be handled, and what messages they generate.

(You can then use the Alarm/Event Control screen object to display your alarms on screen, but that is a separate procedure.)

Trend Logger

You can use Trend worksheets to select project tags that should be displayed as data trends and/or saved as historical data.

(You can then use the Trend Control screen object to actually display your trends on screen, but that is a separate procedure.)

Recipes

You can use Recipe worksheets to select project tags that will load values from and/or save values to an external file. These worksheets are typically used to execute process recipes, but you can store any type of information such as passwords, operation logs, and so on.

(You can then call the `Recipe` function to actually run a configured Recipe worksheet, but that is a separate procedure.)

Reports

You can use Report worksheets to design runtime reports that are either sent to a printer or saved to disk.

(You can then call the `Report` function to actually run a configured Report worksheet, but that is a separate procedure.)

Math

You can use Math worksheets to develop complex runtime logic using the built-in scripting language.

Script

You can use Script worksheets to develop complex runtime logic using VBScript.

Scheduler

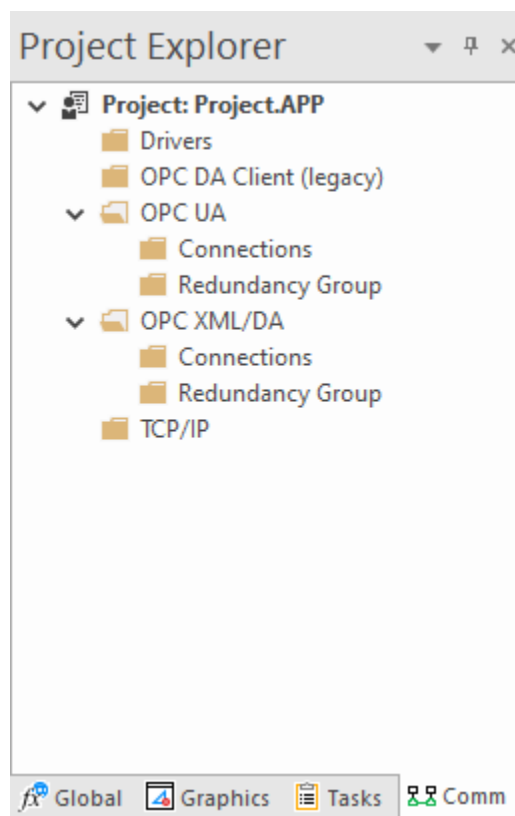
You can use Scheduler worksheets to run commands at specified times, dates, or trigger events.

Database/ERP

You can use Database worksheets to set up connections and exchange data with external databases using the standard ADO.NET interface.

Comm tab

The Comm tab of the Project Explorer organizes the worksheets that control communication with remote devices, using either direct communication drivers or other common protocols.



Comm tab of the Project Explorer

The folders on the Comm tab are described in the following sections:

Drivers

You can use Driver worksheets to communicate with PLCs and other hardware, using any of the hundreds of direct communication drivers that are installed with the development application.

OPC DA 2.05

You can use OPC worksheets to communicate with OPC servers via the OPC Classic protocol.

OPC UA

You can use OPC UA worksheets to communicate with OPC servers via the new OPC Unified Architecture protocol.

OPC XML/DA

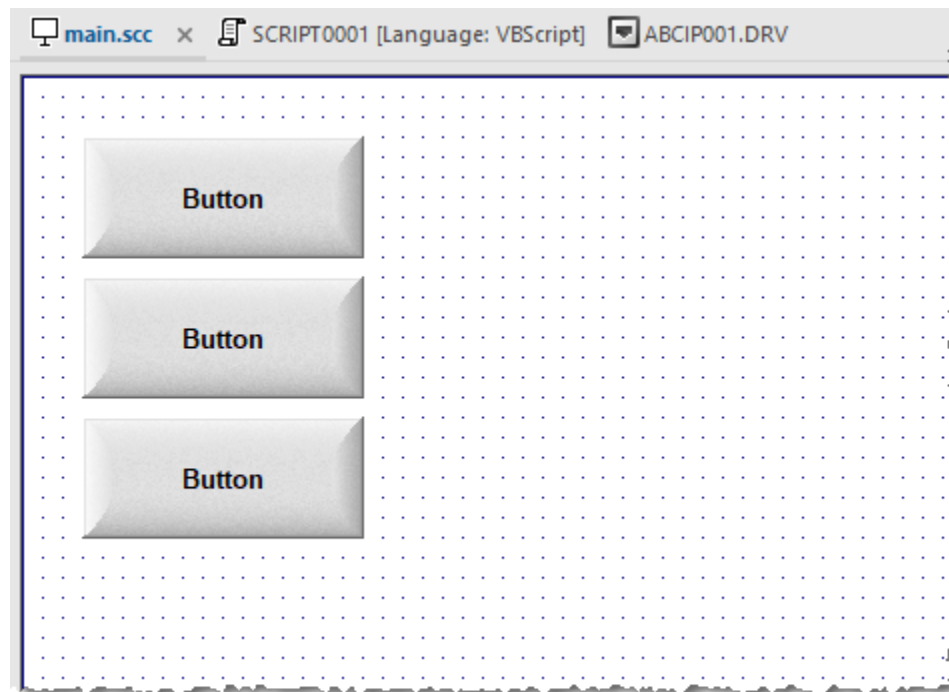
You can use OPC XML/DA worksheets to communicate with OPC servers via the new OPC XML-DA protocol.

TCP/IP

You can use TCP/IP worksheets to configure communication between your own project and other IWS projects. The TCP/IP Client and TCP/IP Server modules enable two or more projects to keep their databases synchronized using the TCP/IP protocol.

Screen/Worksheet Editor

Use the powerful, object-oriented screen editor to create and edit a variety of screens and worksheets for your projects. You can input information using your mouse and keyboard, output control data to your processes, and automatically update screens based on data input from your processes.



Screen/Worksheet Editor

Other screen editor features include:

- Simple point-and-click, drag-and-drop interface
- Grouping objects to preserve the construction steps of individual objects
- Editing objects without having to ungroup internal object components or groups
- Handling bitmap objects and background bitmaps
- Status line support in project windows and dialogs

Watch window


The *Watch* window is a debugging tool that lets you: watch and force values to project tags; execute and test functions; and execute and test math expressions.

| Tag/Expression | Value | Quality | Continuous |
|---------------------------------|-------|---------|-------------------------------------|
| Second | 35 | GOOD | <input checked="" type="checkbox"/> |
| Minute | 7 | GOOD | <input checked="" type="checkbox"/> |
| Hour | 13 | GOOD | <input checked="" type="checkbox"/> |
| Sqrt(25) | 5 | GOOD | <input type="checkbox"/> |
| IsTaskRunning("Startup Script") | 0 | GOOD | <input checked="" type="checkbox"/> |

Example of the Watch window

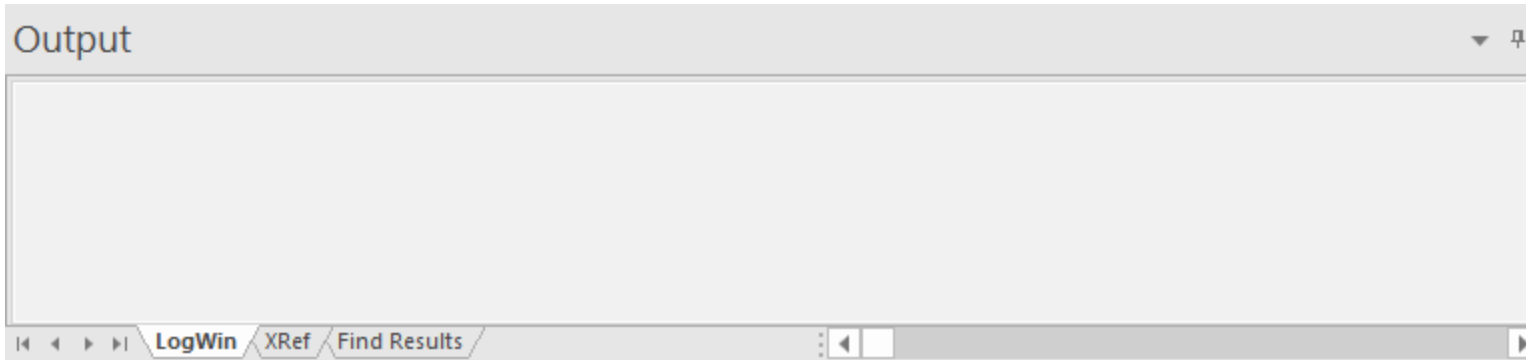
The *Watch* window contains the following elements:

- For each item that you want to watch during project run time:
 - **Tag/Expression:** Specify a project tag, system tag, or expression that you want to watch.
 - **Value:** Displays the value returned by the tag/expression.
 - **Quality:** Displays the quality (GOOD or BAD) of the value returned by the tag/expression.
 - **Continuous:** Select this option to have the project continuously evaluate the tag/expression.
- **DB tabs:** You can use these tabs to organize the items you are watching, so that you do not need to scroll through one long list of items.
- **Locals, Stack Frame, and Tasks Frame tabs:** These tabs are used to debug VBScript. For more information, see [Observe the current state in the Watch window](#).
- **Scroll bars:** Use to view areas of the *Watch* window that are obscured from view because of the window size or the size of the current sheet.

 **Tip:** The *Watch* window is dockable, which means you can move it to another location in the project development environment. Click on the titlebar and drag it to a new location. Release the mouse button to attach or dock the window to its new location.

Output window


Use the *Output* window to view additional information about your project. By default, the window is located in the bottom-right corner of the project development environment.



Output window

The *Output* window has three tabs:

- The **LogWin** tab displays the log messages that are generated by your project. You can select exactly which types of messages are displayed, but generally speaking, the log includes run-time messages from the tags database, the communication drivers, the background tasks, the project security system, and so on, as well as certain "housekeeping" messages generated by the project development environment itself. You can use these messages to test and debug your project.

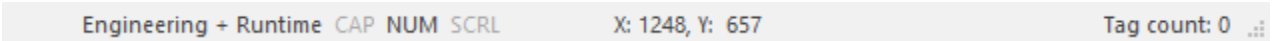
 **Note:** The *Output* window cannot display the log for a project running on a remote computer. It also cannot print or save log messages. If you want to do either of those things, use the [LogWin module](#) instead.

- The **XRef** tab displays the results of using the **Cross Reference** tool to find where a specific tag is used in your project. The results include the file path and name of the worksheet in which the tag is used, as well as the column and row in the worksheet. So, if something changes in the tag and produces unexpected or unsuccessful results, you can locate all instances of the tag for debugging purposes. For more information, see [Cross Reference Tool](#).
- The **Find Results** tab displays the results of using the **Global Find** command. For more information, see [Find text in the current document or entire project](#).

The *Output* window is dockable, which means you can drag it to another location in the project development environment.

Status bar

The Status Bar located along the bottom of the development environment provides information about the active screen (if any) and the state of the application.



Example of Status Bar

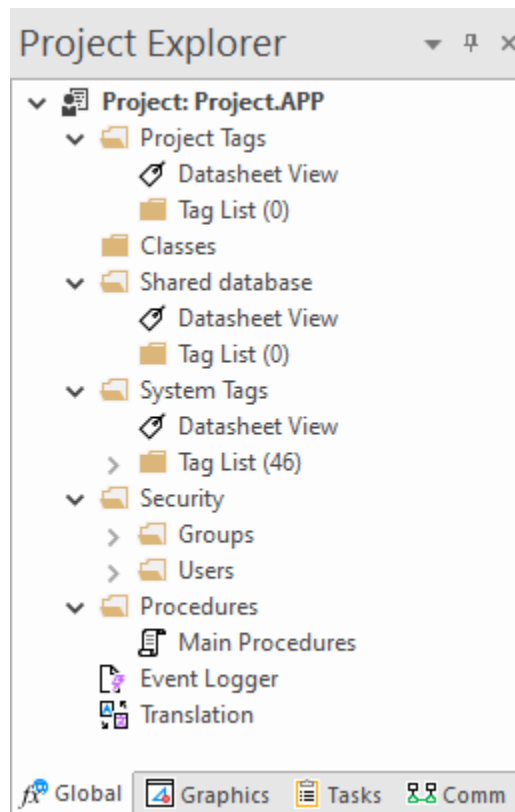
The Status Bar fields (from left to right) are described in the following table:

| Field | Description |
|-----------------|---|
| Execution Mode | The current execution mode of the application. |
| CAP | Indicates whether the keyboard Caps Lock is on (black) or off (grey). |
| NUM | Indicates whether the keyboard Num Lock is on (black) or off (grey). |
| SCRL | Indicates whether the keyboard Scroll Lock is on (black) or off (grey). |
| Object ID | The ID number of a selected screen object. |
| Cursor Position | The location of the cursor on the active screen or worksheet. If it's a screen, then the position of the <i>mouse</i> cursor is given as X,Y coordinates, where X is the number of pixels from the left edge of the screen and Y is the number of pixels from the top edge of the screen. If it's a worksheet, then the position of the <i>text</i> cursor is given as Line and Column. |
| Object Size | The size (in pixels) of a selected screen object, where W is the width and H is the height. |
| No DRAG | Indicates whether dragging is disabled (No DRAG) or enabled (empty) in the active screen. |
| Tag Count | The total number of tags used so far in the project. |

About Tags and the Project Database

Tags are a core component of any IWS project. Simply put, tags are variables used by IWS to receive and store data obtained from communication with plant floor devices, from the results of calculations and functions, and from user input. In turn, tags can be used to display information on screens (and Web pages), to manipulate screen objects, and to control [runtime tasks](#).

But tags are more than simple variables. IWS includes a real-time database manager that provides a number of sophisticated functions such as time-stamping of any value change, checking tag values against runtime minimum and maximum values, comparing tag values to alarming limits, and so on. A IWS tag has both a value and various properties that can be accessed, some at development and others only at runtime.



All tags are organized into one of the following categories, which are represented by folders on the [Global tab](#) of the *Project Explorer*:

- **Project Tags** are tags that you create during project development. Places where project tags are used include:
 - Screen tags
 - Tags that read from/write to field equipment
 - Control tags
 - Auxiliary tags used to perform mathematical calculations
- **Shared Database** tags are created in a PC-based control program and then imported into IWS's tags database.

For example you might create tags in SteepleChase and import them into IWS so IWS can read/write data from a SteepleChase PC-based control product.

You cannot modify shared tags within IWS — you must modify the tags in the original PC-based control program, and then re-import them into the Tags database.

- **System Tags** are predefined tags with predetermined functions that are used for IWS supervisory tasks. For example,
 - Date tags hold the current date in string format
 - Time tags hold the current time in string format

Most system tags are *read-only*, which means you cannot add, edit, or remove these tags from the database.

To see a list of the system tags, select the **Global** tab in the *Project Explorer*, open the **System Tags** folder, and open the **Tag List** subfolder.

After creating a tag, you can use it anywhere within the project, and you can use the same tag for more than one object or attribute.

Naming the Tag

Observe the following guidelines when you name a tag or class member:

- Each name must be unique — you cannot specify the same name as another user-created tag or class member, an imported tag, a system tag, or a built-in function. If you enter an existing name, the project development environment will recognize that name and it will not prompt you to create a new tag.
- The name can be composed of uppercase and lowercase letters (**A-Z**, **a-z**), the accented forms of those letters (e.g., **é**, **ü**, **ç**), standard numerals (**0-9**), and the underscore character (**_**). All other punctuation, special characters, mathematical symbols, and non-Latin alphabets are not allowed.
- The name must begin with a letter.
- The name can be up to 255 characters long.
- Even though the name can be composed of both uppercase and lowercase letters, it is not actually case-sensitive. It will be recognized as long as it is spelled correctly. Therefore, you can use uppercase and lowercase letters to make the name more readable to you. For example, **TankLevel1** and **tankLevel1** both refer to the same tag.



Tip: To indicate a tag will be used as an [indirect tag](#), insert the "at" sign (@) at the beginning of the tag name.

Choosing the Tag Data Type

Another consideration when designing a tag is what type of data the tag will receive. IWS recognizes the following, standard tag *data types*:


- **Boolean** (*one bit*): Simple boolean with the possible values of 0 (false) and 1 (true). Equivalent to the "bool" data type in C++. Typically used for turning objects off and on or for closing and opening objects.
- **Integer** (*four bytes*): Integer number (positive, negative, or zero) internally stored as a signed 32-bit. Equivalent to the "signed long int" data type in C++. Typically used for counting whole numbers or setting whole number values. Examples: **0**, **5**, **-200**.
- **Real** (*floating point, eight bytes*): Real number that is stored internally as a signed 64-bit. Equivalent to the "double" data type in C++. Typically used for measurements or for decimal or fractional values.
- **String** (*alphanumeric data, up to 1024 characters*): Character string up to 1024 characters that holds letters, numbers, or special characters. Supports both ASCII and UNICODE characters. Examples: **Recipe product X123**, **01/01/90**, ***** On *****.

You can also assign a new tag to a [class](#) that you have previously created.

You can find these tag types (and their respective icons) in the [Global tab](#) of the *Project Explorer*.

Using Array Tags


IWS tags can consist of a single value or an array of values.

 **Note:** The maximum array size is 16384 as long as it does not exceed the maximum number of tags supported by the license (Product Type) selected for the project. Each array position (including the position 0) counts as one tag for licensing restrictions, because each position has an independent value.

An array tag is a set of tags with the same name, which is identified by indexes (a matrix of n lines and 1 column). The maximum array size depends on the product specification. You can use the following syntax to access an array tag:


ArrayTagName[***ArrayIndex***]

For example: **tank**[0], **tank**[1], **tank**[2], and **tank**[500].

 **Note:** You must specify a maximum index for each array tag in the **size** column of any datasheet. You can specify n to indicate the array tag has positions from 0 to n . For example, if the size of TagA is 3, the tag elements could be **TagA**[0], **TagA**[1], **TagA**[2], and **TagA**[3].

Use the array tag whenever possible because it optimizes memory use and simplifies the configuration task. For example, if you want a display to monitor each tank, you could use array tags to configure a single display containing tags linked to any tank. For example (using the **tk** tag as an index containing the number of the tank): **pressure**[**tk**], **temperature**[**tk**], and **temperature**[**tk**+1].

An array index can be a tag, a numeric value, or an expression with the arithmetic operator "+".

 **Note:** When you refer to an array with an index using the + arithmetic operation, you must use the following syntax:

ArrayTagName[***NumValue1***+***NumValue2***]


Where ***NumValue1*** and ***NumValue2*** can be an integer tag or a numerical constant. For example: **temperature**[**tk**+2] or **temperature**[**tk**+6].

Using array tags in any IWS task can save a significant amount of project development time. For example, if you needed tag points related to the temperature of four tanks. The conventional configuration method is the following:

- **temperature1**: high temperature on tank 1
- **temperature2**: high temperature on tank 2
- **temperature3**: high temperature on tank 3
- **temperature4**: high temperature on tank 4

Using array tags simplifies this task, as follows:

- **temperature**[**j**]: high temperature on tank {j}

 **Note:** When you create a four-position array tag, the system creates five positions (from 0 to 4). For example:

```
tag_example[15] //start position=0, end position=15
```

Therefore, the **tag_example**[15] array has 16 elements.

When using another tag to reference the index of an array, if the value of the tag is outside the size of the array, then the following results are given:

- If *IndexTag* is greater than the size of the array, then **MyArray[*IndexTag*]** will point to the end position of the array; and
- If *IndexTag* is less than 0, then **MyArray[*IndexTag*]** will point to the start position of the array.

Array Tags

An *array* tag consists of a set of tags that all have the same name, but use unique array indexes (a matrix of n lines and one column) to differentiate between each tag. An *array index* can be a fixed value, another tag or an expression. Maximum array sizes are determined by product specifications.

You can use array tags to:

- Simplify configurations
- Enable multiplexing in screens, recipes, and communication interfaces
- Save development time during tag declaration

You specify array tags in one of two formats:

- For a simple array tag, type:

ArrayTagName[ArrayIndex]

- For a complex array tag (where the array index is an expression consisting of a tag and an arithmetic operation), type:

ArrayTagName[ArrayIndex+c]

Where:

- **ArrayTagName** is the tag name;
- [**ArrayIndex**] is the unique index (fixed value or another tag);
- + is an arithmetic operation; and
- **c** is a numerical constant.

Note:

- You must specify a maximum index for each array tag by typing a value (n) in the Array Size column of an *Project Tags* datasheet or in the Array Size field on a *New Tag* dialog.
When you create an n -position array tag, IWS actually creates **$n+1$** positions (from 0 to n). For example, if you specify **ArrayTag[15]**, the array will have 16 elements, where 0 is the start position and 15 is the end position.

- You must not use spaces in an array tag.

When IWS reads a tag it begins with the first character and continues until it finds the first space or null character. Consequently, the system does not recognize any characters following the space as part of the array tag.

For example, if you type **a[second + 1]**, IWS regards **a[second** as the tag and considers it invalid because IWS does not find (recognize) the closing bracket. However, if you type **a[second +1]**, this is a valid array tag.

You can specify an array tag wherever you would use a variable name. Also, because array tags greatly simplify configuration tasks and can save development time, we suggest using them whenever possible.

For example, suppose you want to monitor the temperature of four tanks. The conventional configuration method is:

- **temperature1** — high temperature on tank 1
- **temperature2** — high temperature on tank 2

- **temperature3** — high temperature on tank 3
- **temperature4** — high temperature on tank 4


You can use array tags to simplify this task as follows (where $[n]$ represents the tank number):

- **temperature** $[n]$ — high temperature on tank $[n]$

The following table contains some additional examples of an array tag:


Array Tag Examples

| Array Tag Example | Description |
|---|---|
| Tank $[1]$, Tank $[2]$, Tank $[500]$ | Simple arrays, where the array indexes (1 , 2 , and 500) are numerical constants. For example, tank numbers. |
| Tank $[tk]$ | A simple array, where the array index (tk) is a tag. For example, a tag representing the tank number. |
| Tank $[tk+1]$ | A complex array, where the array index (tk+1) is an expression. For example, the value of tk (tank number) plus 1. |

-  **Note:** When using another tag to reference the index of an array, if the value of the tag is outside the size of the array, then the following results are given:
- If **IndexTag** is greater than the size of the array, then **MyArray** $[IndexTag]$ will point to the end position of the array; and
 - If **IndexTag** is less than 0, then **MyArray** $[IndexTag]$ will point to the start position of the array (i.e., **MyArray** $[0]$).

About indirect tags

IWS supports indirect access to tags in the database. For example, consider a tag **X** of the String type. This tag can hold the name of any other tag in the [database](#) (that is, it can provide a pointer to any other type of tag, including a class type). The syntax for an indirect tag is straightforward: `@IndirectTagName`. For example, assume that a tag named **X** holds a "TEMP" string. Reading and/or writing to `@X` provides access to the value of the **TEMP** variable.

 **Note:** Any tag created as a string-type tag is potentially an indirect tag (pointer).

To refer to a class-type tag, you can declare a string-type tag that points to a class tag. For example:

| | |
|-------|---------------------------------------|
| Class | TANK with members Level |
| Tag | TK of the class TANK |
| Tag | XCLASS |

To access the **TK.Level** value, you must store the "**TK.Level**" value within the **XCLASS** tag and use the syntax, `@XCLASS`. You can also refer to a member of a class-type tag directly; identifying a class-type that points to a class member.

For example:

| | |
|-------|--|
| Class | TANK with members Level |
| Tag | TK of the class TANK |
| Tag | XCLASS of the class TANK |

To access the **TK.Level** value, you must store the "**TK**" value within the **XCLASS** tag and use the syntax, `@XCLASS.Level`.

When creating tags for indirect use, place an @ in the tag column rather than creating them as strings. For the type, write the type of tag for which you are creating a reference. Follow the **XCLASS** example: `@Z Integer`, `@X Class:TANK`.

Indirect Tags

Indirect tags "point" to other database tags (including class-type tags). Using indirect tags can save development time because they keep you from having to create duplicate tags (and the logic built into them).

You create an indirect tag from any string-type tag simply by typing the @ symbol in front of the tag name `@TagName`.

- To reference a simple tag, assume the **strX** tag (a string tag) holds the value "**Tank**", which is the name of another tag, then reading from or writing to `@strX` provides access to the value of the **Tank** tag.
- To reference a class-type tag and member, you simply create a string tag that points to the class tag and the member. For example, if a tag **strX** (a string tag) holds the value "**Tank.Level**", which is the name of the class tag, then reading from or writing to `@strX` provides access to the value of the **Tank.Level** member.
- You can also point directly to a class-type tag member; by identifying a class-type that points to a class member. For example: to access the **Tank.Level** member of the class, you must store the "**Tank**" value within the **strX** tag and use the syntax, `@strX.Level`.

Tutorial: Building a Simple Project

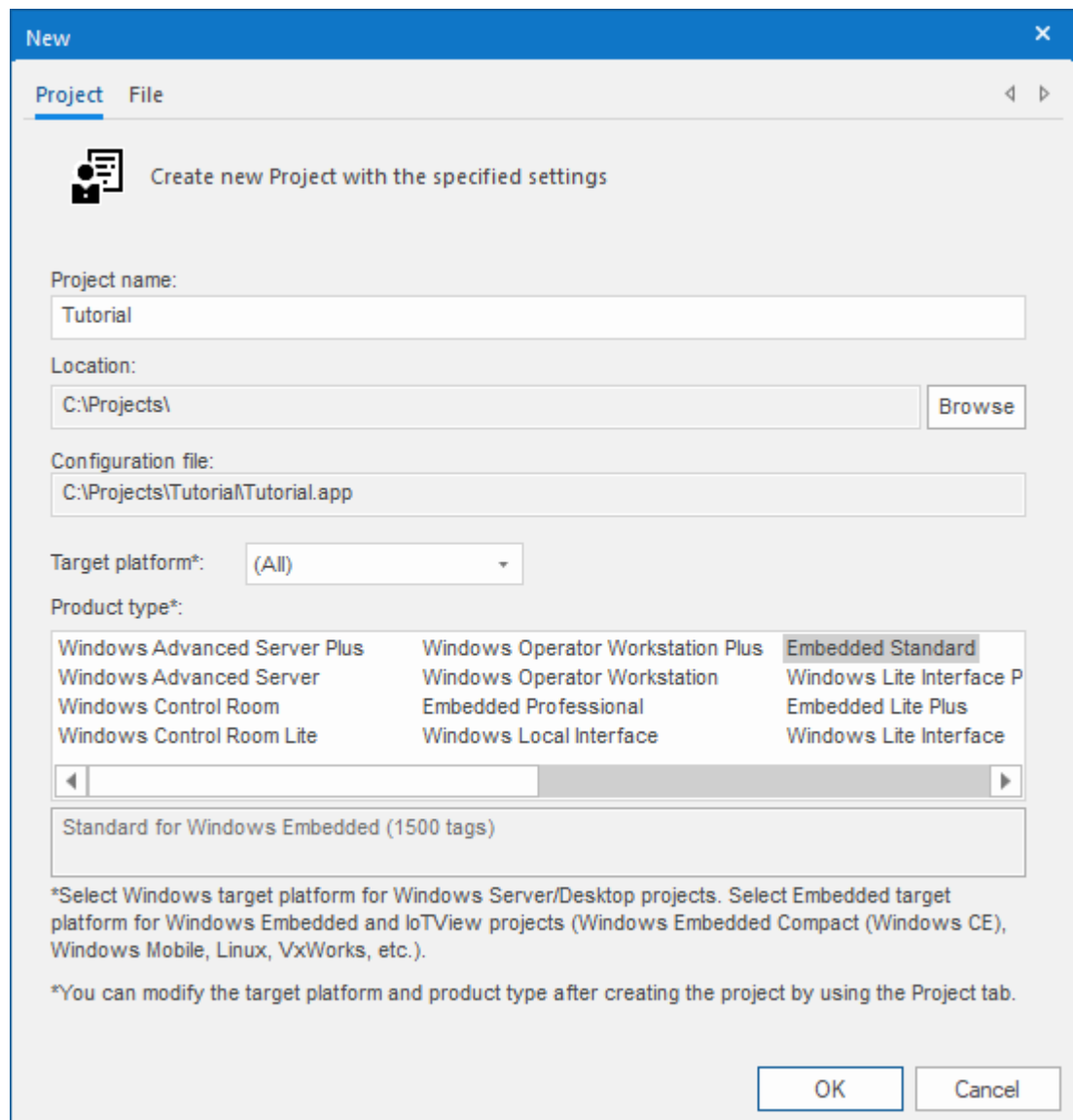
This section explains, using a step-by-step tutorial, how to build a simple project, as well as how to select and configure an I/O driver.

Creating a new project

This part of the tutorial shows how to create a new project, including how to give it a name and then select the target platform and system.

1. Go to **File**, and then click *New*.
The *New* dialog is displayed.
2. Click the **Project** tab, if it is not already selected.
3. In the **Project name** box, type the name of your project.
For this tutorial, type `Tutorial`.
The development application automatically creates a new directory of the same name and assigns your project file to that directory. (Notice the **Configuration file** text box in the figure.) To put your project file somewhere other than in the default projects folder, click **Browse** and navigate to the preferred location.
4. In the **Product type** list, select the type of project that you want to build.

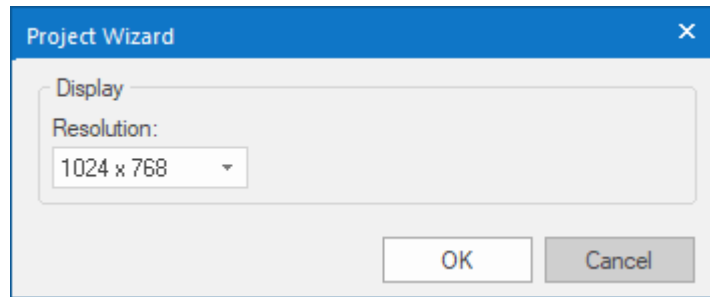
For this example, select **Embedded Standard**. This is a tag and feature-limited product type that can be safely deployed on embedded devices.



Selecting the target platform and product type

5. Click **OK**.
The *New* dialog is closed and the *Project Wizard* dialog is displayed.

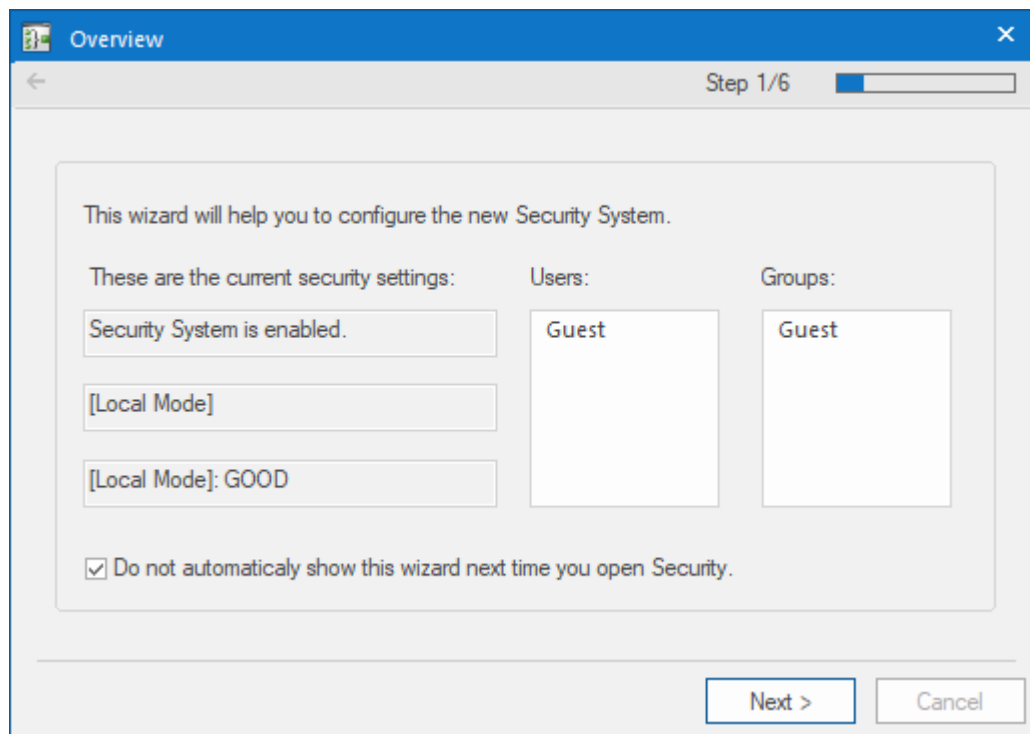
- In the **Resolution** list, select **1024 x 768**.



Specifying an empty Application with 1024x768 resolution

- Click **OK**.

The *Project Wizard* dialog is closed, the project is created in the development environment, and the *Security System Configuration Wizard* is displayed.



Security System Configuration Wizard

- Use the *Security System Configuration Wizard* to set a Main Password for your project.

The security system is enabled by default for all new projects.

When you finish the *Security System Configuration Wizard*, your new project is ready for development.

Specifying the startup screen

This part of the tutorial shows how to open the project settings and then specify which screen should be displayed on startup.

- Use the **Information** tab to provide information that identifies the project (such as project description, revision number, Company name, Author's name, field equipment, and general notes).
- Use the **Options** tab to specify generic settings for the project, such as the Target System, Automatic Translation, Alarm history and Events, Default Database and Shared Tags.
- Use the **Viewer** tab to enable/disable the run-time desktop parameters.
- Use the **Communication** tab to specify communication parameters relating to the project in general.
- Use the **Preferences** tab to enable/disable warning messages when using the development application.

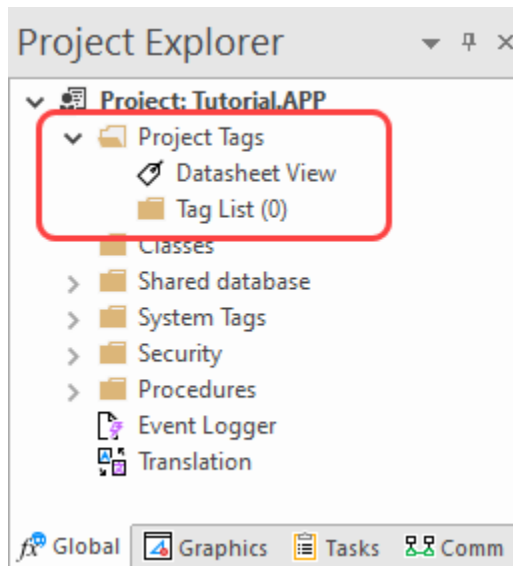
To specify the startup screen:

1. On the **Project** tab of the ribbon, in the **Settings** group, click **Viewer**.
The *Project Settings* dialog is displayed with the **Viewer** tab selected.
2. In the **Startup screen** box, type `main.scc`.
When you run the project, it will automatically display the main screen (or whichever screen you specify) first. You can specify a screen before you create it, but if the screen has been created, then you can also select it from the list.
3. Click **OK**.

Creating tags

This part of the tutorial shows how to create new tags by adding them to the Project Tags datasheet.

A tag is any variable that holds a value. All tags created in a project are stored in the Project Tags folder, on the Global tab of the Project Explorer.



Project Tags folder

1. In the Project Explorer, click the **Global** tab.
2. Double-click **Project Tags** to expand the folder.
3. Double-click **Datasheet View** to open the *Project Tags* datasheet.
4. Use the following parameters to create a tag for the sample project.
 - a) **Name:** Specify a unique tag name. For this tutorial, type `Level1`.
 - b) **Array Size:** Specify the top array index of the tag. (Simple tags have an **Array Size** of 0.) For this tutorial, type 3.
 Each array index corresponds to one of the three tanks:
 - `Level1[1]` is the level of Tank #1
 - `Level1[2]` is the level of Tank #2
 - `Level1[3]` is the level of Tank #3
 You will not use `Level1[0]` in this tutorial, even though it is a valid tag. It is easier to understand if the array indices match the tank numbers.
 - c) **Type:** Specify the data type of the tag: Boolean, Integer, Real, String, or Class. For this tutorial, select **Integer**.
 - d) **Description** (optional): Type a description of the tag for documentation purposes only.
 - e) **Scope:** Specify how the tag is managed between the Server and the Thin Client stations.
 - Select **Local** if you want the tag to have independent values on the Server and Client stations.
 - Select **Server** if you want the tag to share the same value on the Server and Client stations.


For this tutorial, select **Server**.

| | Name | Tag Size | Type | Description | Scope | UA External Availability |
|---|-------------|----------|---------|-------------------|--------|--------------------------|
| | Filter text | F... | (All) | Filter text | (All) | (All) |
| 1 | Level | 3 | Integer | Level of the tank | Server | Disabled |
| * | | | Integer | | Server | Disabled |
| * | | | Integer | | Server | Disabled |
| * | | | Integer | | Server | Disabled |
| * | | | Integer | | Server | Disabled |
| * | | | Integer | | Server | Disabled |

Creating the Level tag

5. Save and close the *Project Tags* datasheet.

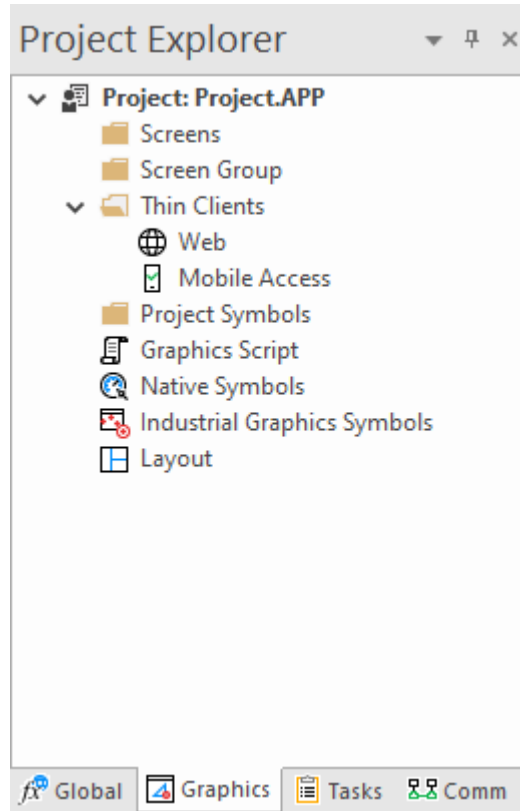
You will create additional tags as you build the project.

 **Tip:** You can sort the data in the *Project Tags* datasheet or insert/remove additional columns by right-clicking on it and then choosing the applicable option from the pop-up menu.

Creating the main screen

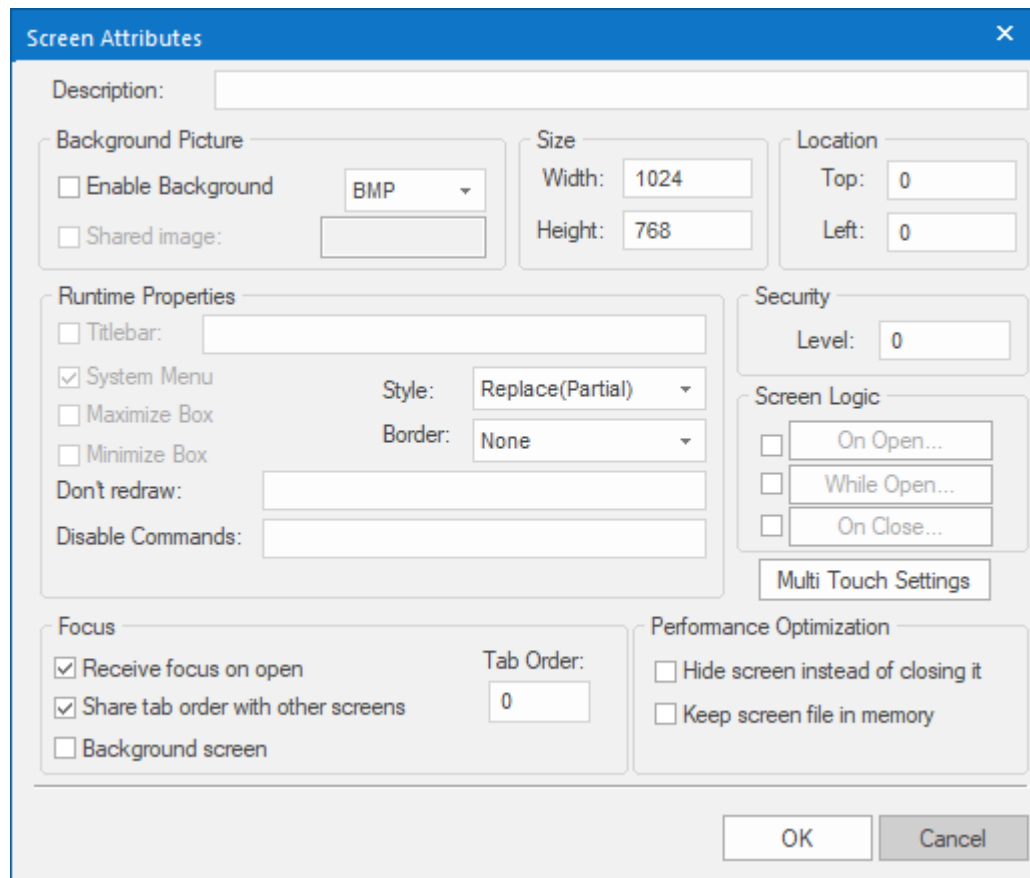
This part of the tutorial shows how to create your first screen, which will contain a single button that opens another screen.

1. In the *Project Explorer*, click the **Graphics** tab.



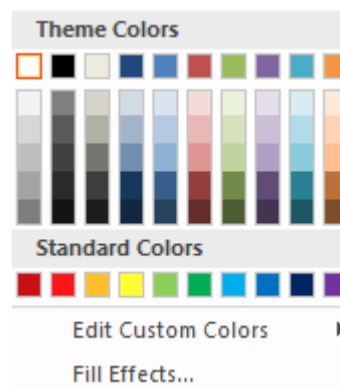
2. Right-click **Screens**, and then click **Insert** on the shortcut menu.
The development application stores all screens created for a project in this **Screens** folder.

The *Screen Attributes* dialog is displayed.



Screen Attributes dialog

3. Use this dialog to set screen properties such as size and type.
For this tutorial, click **OK** to accept the default settings.
The *Screen Attributes* dialog is closed, and the new screen is opened in the workspace for editing.
4. On the **Draw** tab of the ribbon, in the **Screen** group, click **Background Color**.
A standard color picker is displayed.
5. In the color picker, select a light gray color.



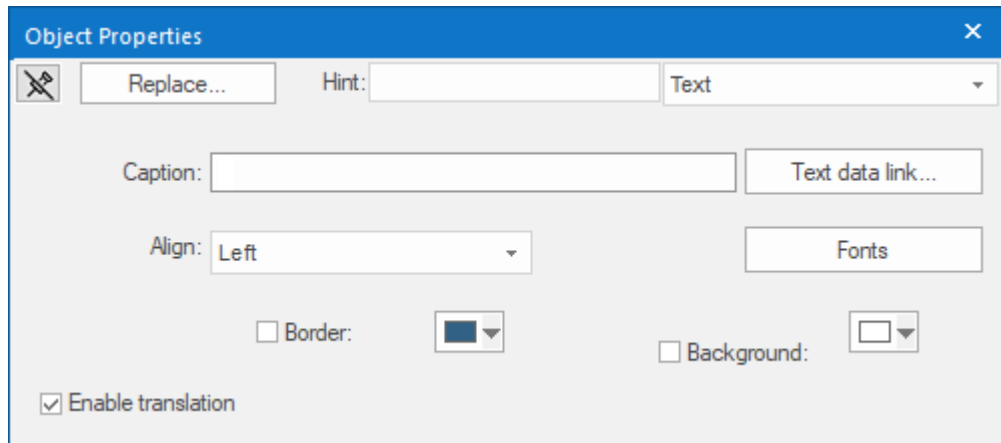
Color picker

That color is applied to the screen.

Drawing the main screen's title

This part of the tutorial shows how to draw the main screen's title using a Text object.

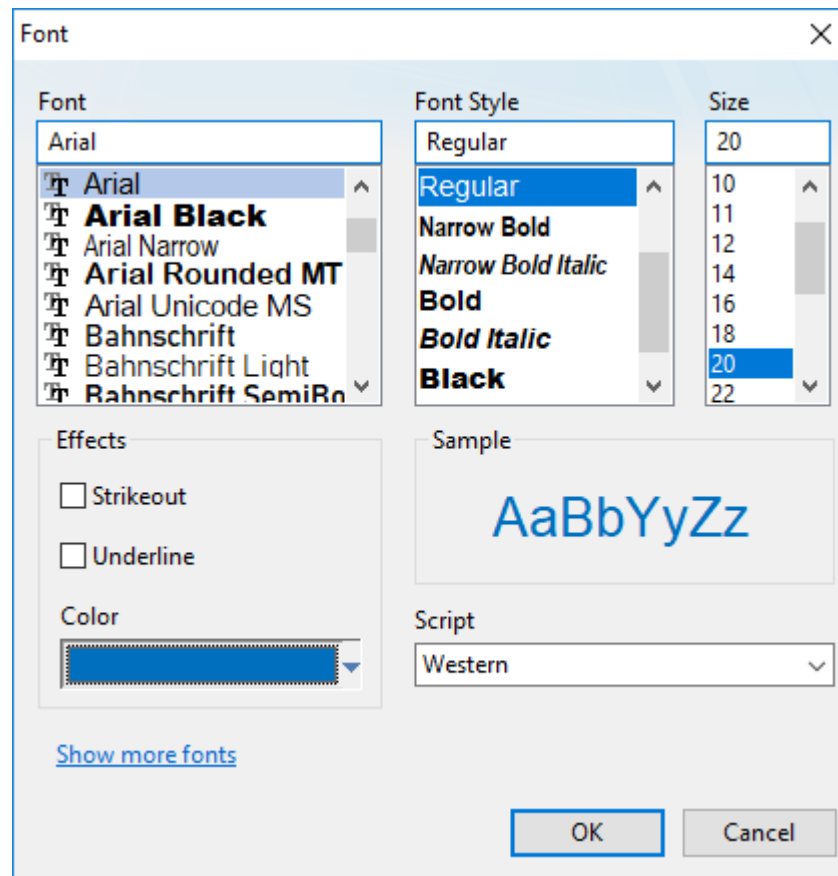
1. On the **Draw** tab of the ribbon, in the **Active Objects** group, click **Text**. Your mouse cursor changes from an arrow to a crosshair.
2. Click on the screen, type `Welcome to the Tutorial Application`, and then press `Return`. This creates a new Text object with the specified text.
3. Double-click the object to open its *Object Properties* dialog.



Object Properties: Text dialog

- Double-clicking on any screen object opens an *Object Properties* dialog containing the properties for that object. The properties shown in the dialog change depending on the type of object.
 - The *Object Properties* dialog also contains a pin button that controls whether this dialog remains open. The button changes state (and function) each time you click on it, as follows:
 - When the pin button is released, the focus is passed to the object on the screen as soon as it is selected. It is recommended that this button is kept released when you want to manipulate the objects (Copy, Paste, Cut, or Delete). Although the *Object Properties* dialog is on the top, the keyboard commands (**Ctrl+C**, **Ctrl+V**, **Ctrl+X**, or **Del**) are sent directly to the objects.
 - When the pin button is pressed, the focus is kept on the *Object Properties* dialog, even when you click the objects on the screen. We recommend you keep this button pressed when you want to modify the settings of the objects. You can click an object and type the new property value directly in the *Object Properties* dialog (it is not necessary to click on the window to bring focus to it). Also, when the pin button is pressed, the *Object Properties* dialog does not automatically close when you click on the screen.
4. Click **Fonts** to open *Font* dialog, and then specify the font settings. For this tutorial...
 - Font is **Arial**
 - Font style is **Regular**
 - Size is **20**

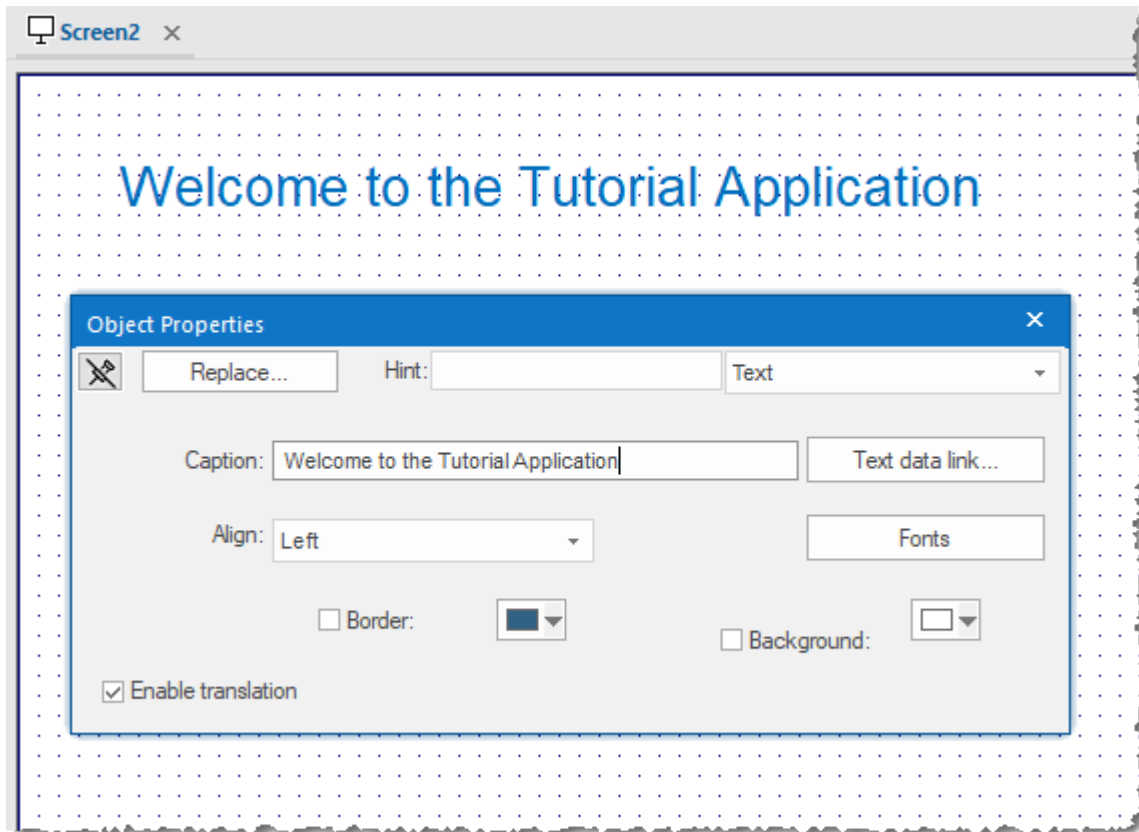
- Color is **Blue**



Specifying the font settings

5. Click **OK** to close the *Font* dialog.

The font settings are applied to the Text object.



Font settings applied to Text object

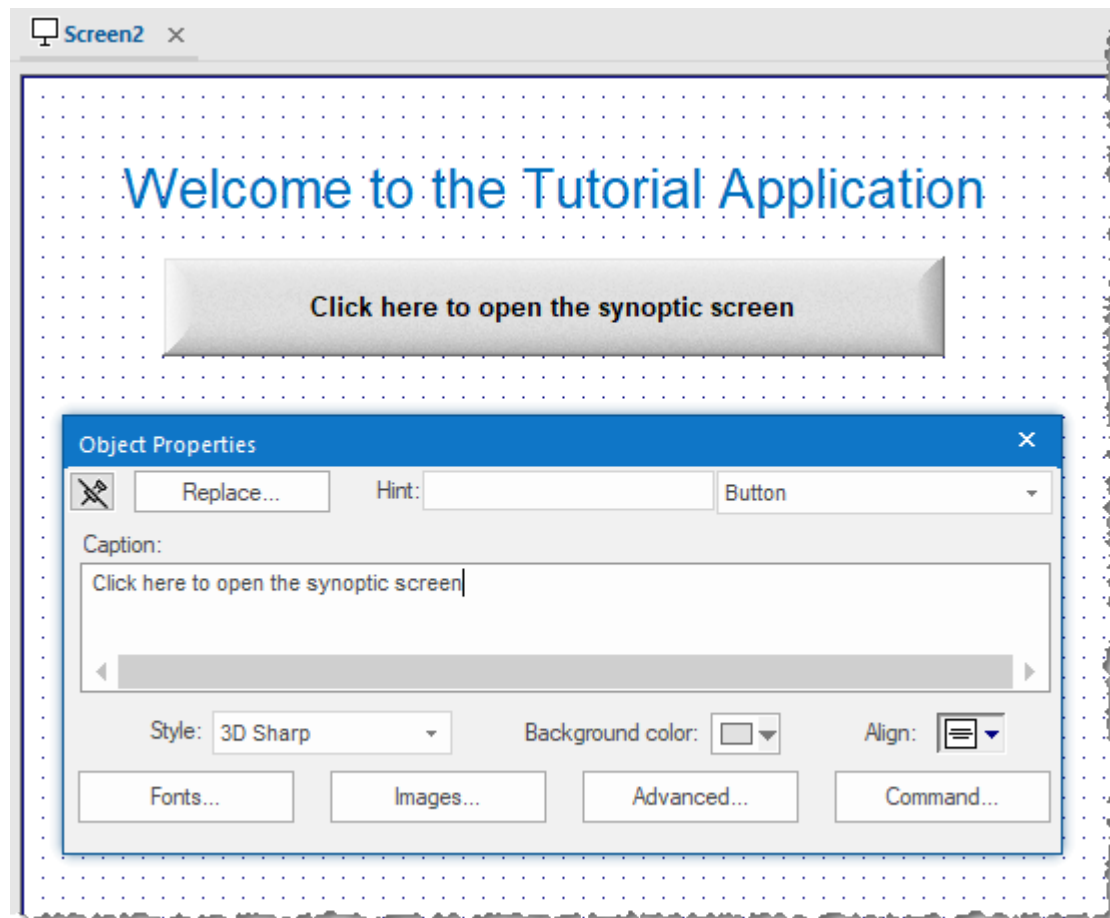
6. Close the *Object Properties* dialog (i.e., click the Close button in the dialog box's top-right corner).

Drawing a button to open another screen

This part of the tutorial shows how to draw and configure a button that will open another screen.

1. On the **Draw** tab of the ribbon, in the **Active Objects** group, click **Button**.
Your mouse cursor changes from an arrow to a crosshair.
2. Click and hold on the screen, and then drag the cursor to draw the Button object.
3. Double-click the object to open its *Object Properties* dialog.

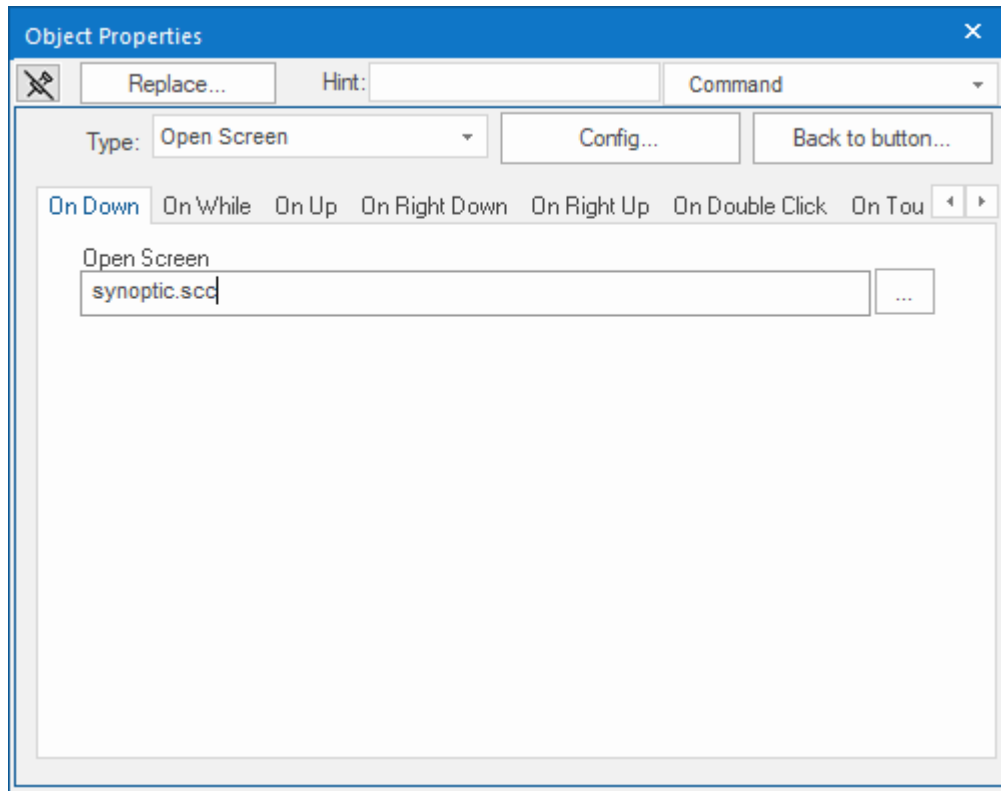
4. In the **Caption** box, type the following text: Click here to open the synoptic screen.



Adding a caption to the button

5. Click **Command**.
The *Object Properties* dialog changes to show the properties for the Command animation.
6. In the **Type** list, select **Open Screen**.

7. In the **Open Screen** box, type `synoptic.scc`.



Configuring an Open Screen command on the button

You can specify a screen that you have not yet created.

8. Close the *Object Properties* dialog.

Saving and closing the main screen

This part of the tutorial shows how to properly save and close a screen.

1. Go to **File**, and then select **Save**.
A standard Windows *Save* dialog is displayed.
2. In the **File name** box, type `main`.
3. Click **Save**.
The file is saved in your project folder (at `<project name>\Screen\main.scc`), and the *Save* dialog is closed.
4. Go to **File**, and then select **Close**.

Creating the synoptic screen

This part of the tutorial show how to create your second screen, which will include an animated tank of liquid and some basic controls for that tank.

1. In the **Graphics** tab of the *Project Explorer*, right-click the **Screens** folder, and then click **Insert** on the shortcut menu.
The *Screen Attributes* dialog is displayed.
2. Use this dialog to set attributes such as size and type.
For this tutorial, click **OK** to accept the default settings.
3. Go to **File**, and then select **Save As**.
A standard Windows *Save As* dialog is displayed.
4. In the **File name** box, type `synoptic`.
5. Click **Save**.
The file is saved in your project folder (at `<project name>\Screen\synoptic.scc`), and the *Save* dialog is closed.

Do not close the screen like you did the main screen when you saved it. You still need to draw the synoptic screen.

Drawing the synoptic screen's title

As in a previous part, this part of the tutorial shows how to draw the synoptic screen's title using a Text object.

1. On the **Draw** tab of the ribbon, in the **Active Objects** group, click **Text**.
2. Click on the screen, type `Synoptic Screen`, and then press Return.
3. Double-click the object to open its *Object Properties* dialog.
4. Click **Fonts** to open *Font* dialog, and then specify the font settings.
For this tutorial...
 - Font is **Arial**
 - Font style is **Bold**
 - Size is **20**
 - Color is **Blue**
5. Click **OK** to save the font settings and close the dialog.
6. Close the *Object Properties* dialog.
7. Move the Text object to the top left corner of the screen.
8. Go to **File**, and then select **Save**.

This figure shows how your screen should look after you have drawn the screen title.



Finished screen title

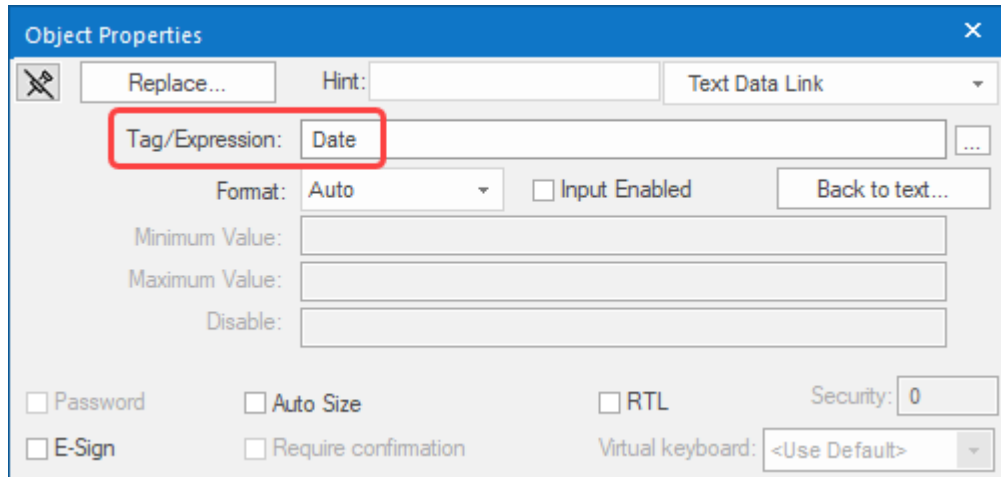
Drawing "Date" and "Time" displays

This part of the tutorial shows how to draw "Date" and "Time" displays by linking Text objects to system tags.

Date and **Time** are system tags that hold the current date and time of the local station. These tags are available to any project.

1. On the **Draw** tab of the ribbon, in the **Active Objects** group, click **Text**.

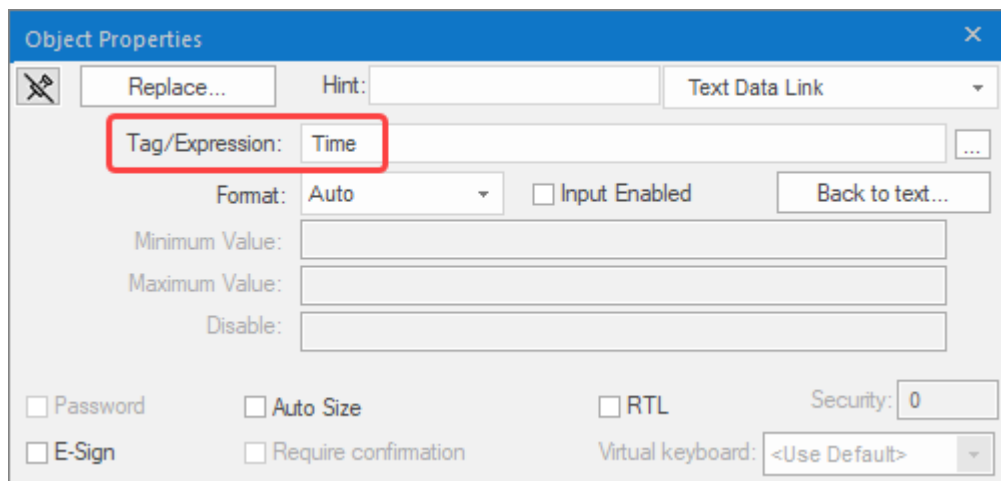
2. Click on the screen, type Date: #####, and then press Return.
3. Double-click the object to open its *Object Properties* dialog.
4. Click **Text Data Link**.
The *Object Properties* dialog changes to show the properties for the Text Data Link animation.
5. In the **Tag/Expression** box, type Date.



Specifying the Date system tag

During run time, the project replaces the ##### characters of the Text object with the value of the system tag **Date**.

6. Close the *Object Properties* dialog.
7. On the **Draw** tab of the ribbon, in the **Active Objects** group, click **Text**.
8. Click on the screen, type Time: #####, and then press Return.
9. Double-click the object to open its *Object Properties* dialog.
10. Click **Text Data Link**.
The *Object Properties* dialog changes to show the properties for the Text Data Link animation.
11. In the **Tag/Expression** box, type Time.



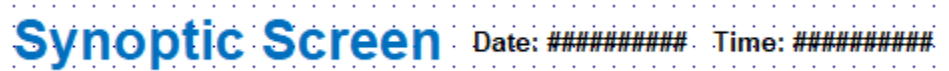
Specifying the Time system tag

During run time, the project replaces the ##### characters of the Text object with the value of the system tag **Time**.

12. Close the *Object Properties* dialog.

13. Go to **File**, and then select **Save**.

This figure shows how your screen should look after you have created the date and time objects.



The image shows a screenshot of a software interface. The main title is "Synoptic Screen" in a large, blue, sans-serif font. To the right of the title, there are two text fields: "Date: #####" and "Time: #####". The entire text area is enclosed in a dotted rectangular border.

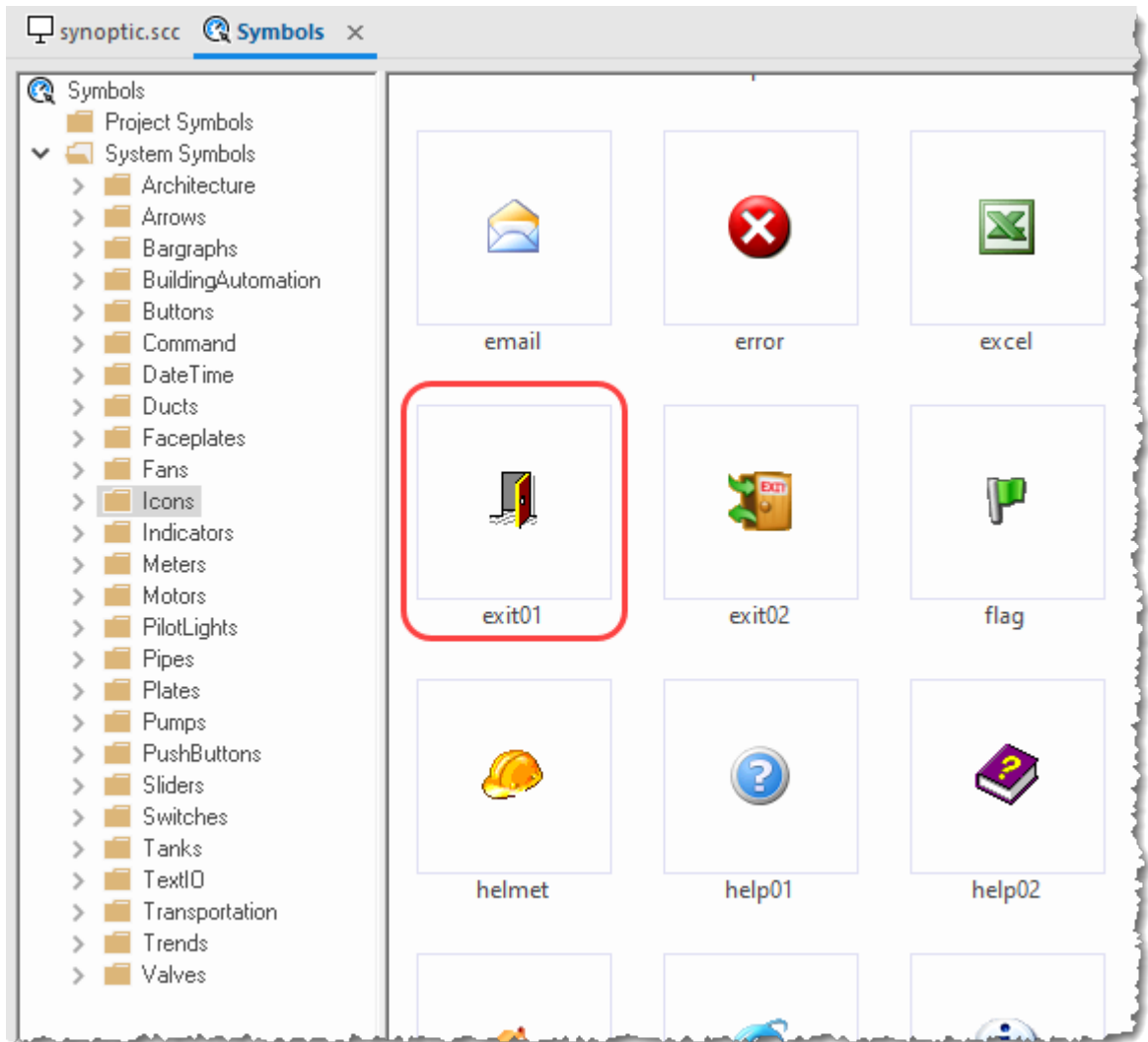
Finished date and time objects

Placing an "Exit" icon

This part of the tutorial shows how to place an icon (by selecting and configuring a Linked Symbol) that allows the user to exit the project, .

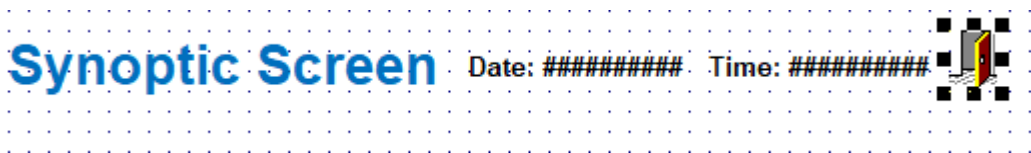
1. On the **Draw** tab of the ribbon, in the **Libraries** group, click **Symbols**.
The symbols library is displayed.
2. In the Symbols menu tree, open the **System Symbols** folder and then open the **Icons** sub-folder.
3. In the Icons sub-folder, select **exit01**.

The symbol will be displayed in the symbol viewer to the right of the menu tree.



Selecting the "exit01" symbol

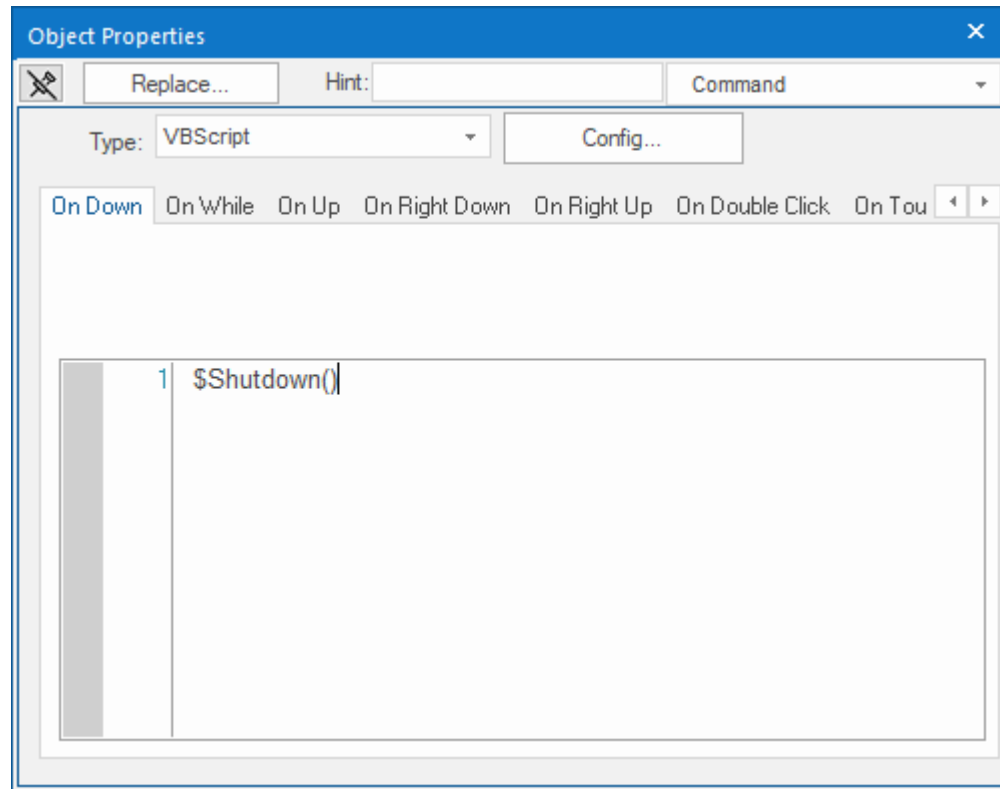
4. Click on the symbol.
The mouse cursor will change to show that the symbol is ready to be placed in a screen.
5. Switch back to the screen where you want to place the symbol and then click in it.
The symbol is placed as a Linked Symbol object.



Placing the Linked Symbol object

6. With the object still selected, click **Command** (on the **Draw** tab of the ribbon, in the **Animations** group) to apply this animation to the object.
7. Double-click the object to open its *Object Properties* dialog.
8. In the **Type** list, select **VBScript**.

9. In the **On Down** box, type `$Shutdown()`.
`Shutdown` is one of InduSoft Web Studio 2020's built-in scripting functions, but it can be used within VBScript by prefacing it with a dollar sign (`$`).



Specifying the Shutdown command on the symbol

10. Close the *Object Properties* dialog.
 11. Go to **File**, and then select **Save**.

Now, when a user clicks this icon during run time, the project will stop and exit to the station's desktop.

Testing the project

This part of the tutorial shows how to test the project so far.

1. Go to **File**, and then select **Close All**.
All open worksheets are closed.
2. On the **Home** tab of the ribbon, in the **Local Management** group, click **Run**.
The project runs and the startup screen is displayed.
3. Click the button to open the synoptic screen.
The synoptic screen is displayed.
4. Click the exit icon to shut down the project.

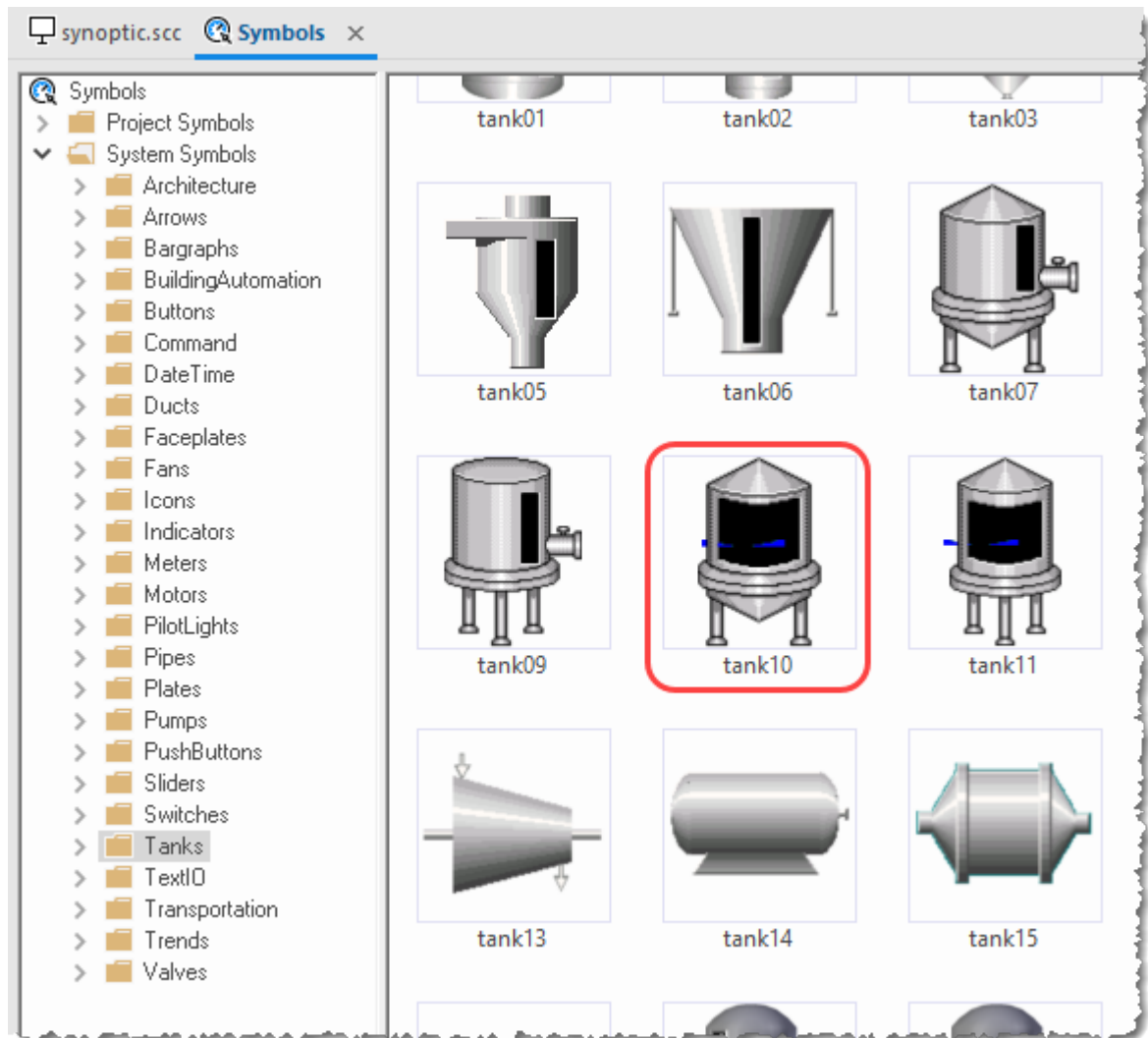
If any part of the project does not work as expected, switch back to the development application (**ALT+TAB**) and then click **Stop** on the Home tab of the ribbon.

Placing an animated tank

This part of the tutorial shows how to select an animated tank from the Symbol Library and place it on the screen (similar to how you selected and placed the "Exit" icon), then associate some project tags with the tank's properties.

1. In the **Graphics** tab of the *Project Explorer*, expand the **Screens** folder.

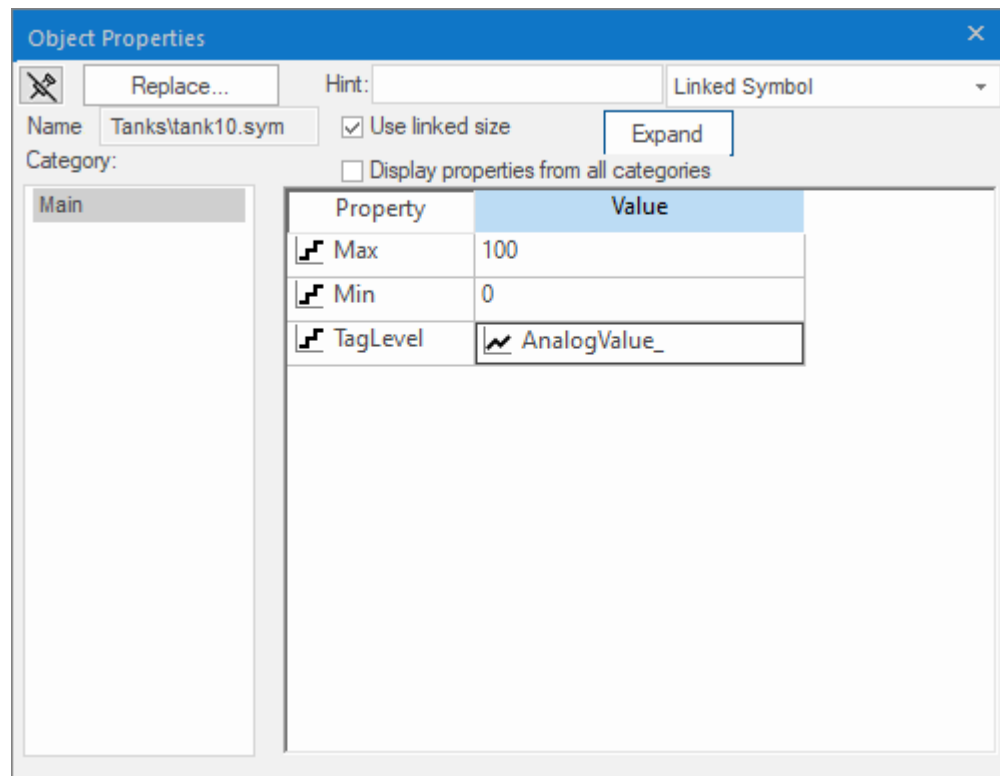
2. Double-click **synoptic.scc**.
The synoptic screen worksheet is reopened for editing.
3. On the **Draw** tab of the ribbon, in the **Libraries** group, click **Symbols**.
4. In the Symbols menu tree, open the **System Symbols** folder and then open the **Tanks** sub-folder.
5. Browse the tank symbols and choose one.
You may choose any tank symbol that you like; they all function basically the same.



Choosing a tank symbol

6. Click the symbol.
The mouse cursor will change to show that the symbol is ready to be placed in a screen.
7. Switch back to the screen where you want to place the symbol and click in it.
The symbol is placed as a Linked Symbol object.

8. Double-click the object to open its *Object Properties* dialog.

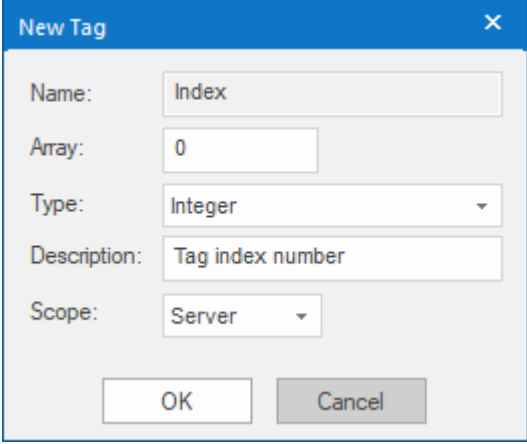


The tank symbol's properties

A tank is an arrangement of different objects and animations (for example a rectangle, a bar graph, etc.), all combined together as a Linked Symbol. You can modify the properties of this symbol by editing the properties list. For this tutorial, you will modify the tag associated with the tank level.

9. For the property **TagLevel**, delete the existing value and then type `Level[Index]`.
Note that you do not need to reopen the Project Tags datasheet to create tags as you develop the project. Because you have not previously created the tag **Index** in the Project Tags database, an alert message asks you if you would like to create it.
10. Click **Yes**.
A *New Tag* dialog is displayed.

11. Configure the new tag with **Array** as 0, **Type** as Integer, and **Scope** as Local.



Configuring a new tag

12. Click **OK** to close the *New Tag* dialog.

You can use the tag **Index** to set the array position of the tag **Level**, and show the level for any of the three tanks in the same object:

- When **Index** equals **1**, the tank object shows the level of Tank #1 (i.e., **Level[1]**);
- When **Index** equals **2**, the tank object shows the level of Tank #2 (i.e., **Level[2]**); and
- When **Index** equals **3**, the tank object shows the level of Tank #3 (i.e., **Level[3]**).

Also, because the tag scope is local, the tag can have different values for the Server and Client stations at the same time. Consequently, the local user (i.e., the Server station) can be monitoring the level of Tank #1 while the remote user (i.e., the Client station) is monitoring the level of Tank #2.

13. Close the *Object Properties* dialog.

14. Go to **File**, and then select **Save**.

This figure shows how your screen should look after you've created the tank object.



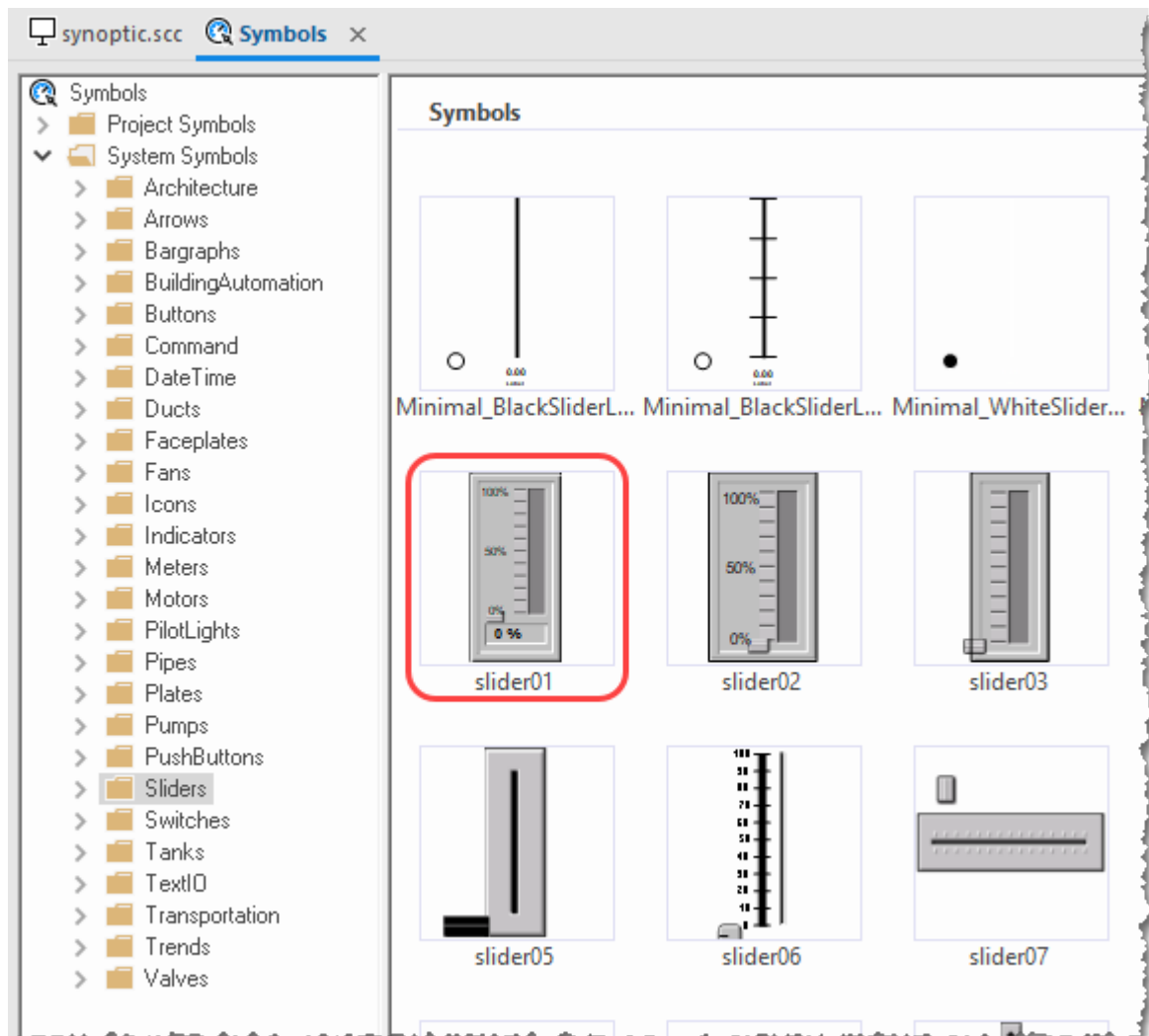
Finished tank object

Placing a level slider

This part of the tutorial shows how to select a slider control from the Symbol Library and then connect it to the animated tank.

1. On the **Draw** tab of the ribbon, in the **Libraries** group, click **Symbols**.

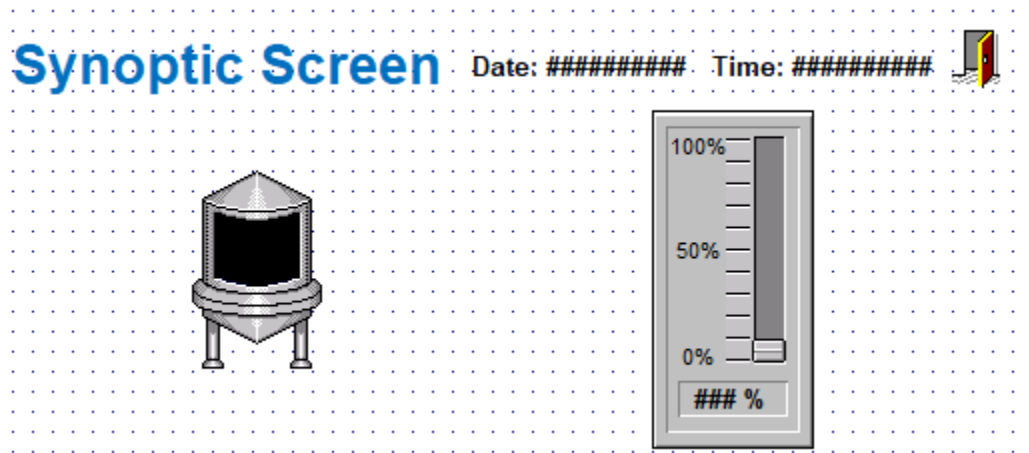
- In the Symbols menu tree, open the **System Symbols** folder and then open the **Sliders** sub-folder.



Selecting a slider symbol

- In the Sliders sub-folder, select a slider control.
You may select any slider you like; they all function basically the same way.
- Click on the symbol.
The mouse cursor will change to show that the symbol is ready to be placed in a screen.
- Switch back to the screen where you want to place the symbol and click in it.
The symbol is placed as a Linked Symbol object.
- Double-click the object to open its *Object Properties* dialog.
- For the property **TagName**, delete the existing value and then type `Level [Index]`.
Just as with the tank, you need to modify the symbol property associated with the slider level.
- Close the *Object Properties* dialog.
- Go to **File**, and then select **Save**.

This figure shows how your screen should look after you've created the level slider object.

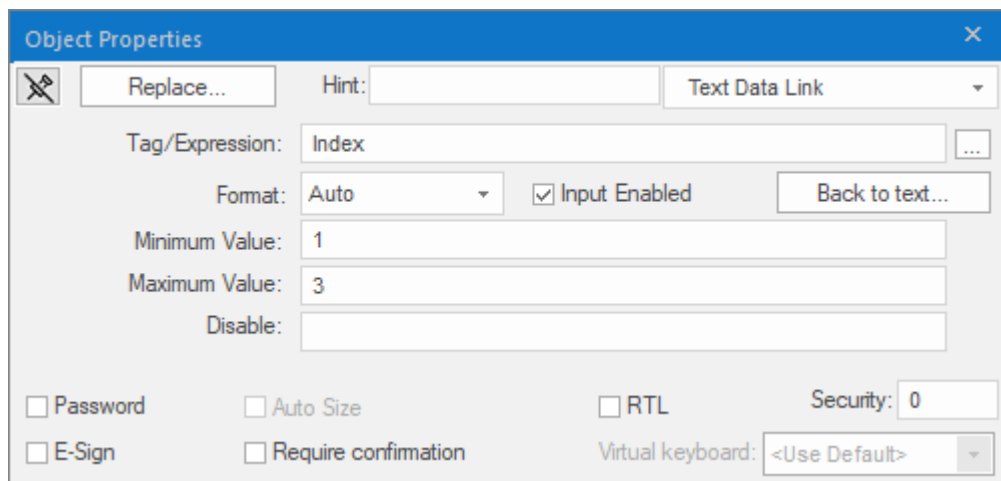


Finished level slider object

Drawing a tank selector

This part of the tutorial shows how to draw a text input box that can be used to change which real-world tank is represented by the animated tank on the screen.

1. On the **Draw** tab of the ribbon, in the **Active Objects** group, click **Text**.
2. Click on the screen, type **Tank: #**, and then press Return.
3. Double-click the object to open its *Object Properties* dialog.
4. Click **Text Data Link**.
The *Object Properties* dialog changes to show the properties for the Text Data Link animation.
5. In the **Tag/Expression** box, type Index.
6. Select the **Input Enabled** option.
This lets the user enter a new value for the tag during run time.
7. In the **Minimum Value** box, type 1.
8. In the **Maximum Value** box, type 3.

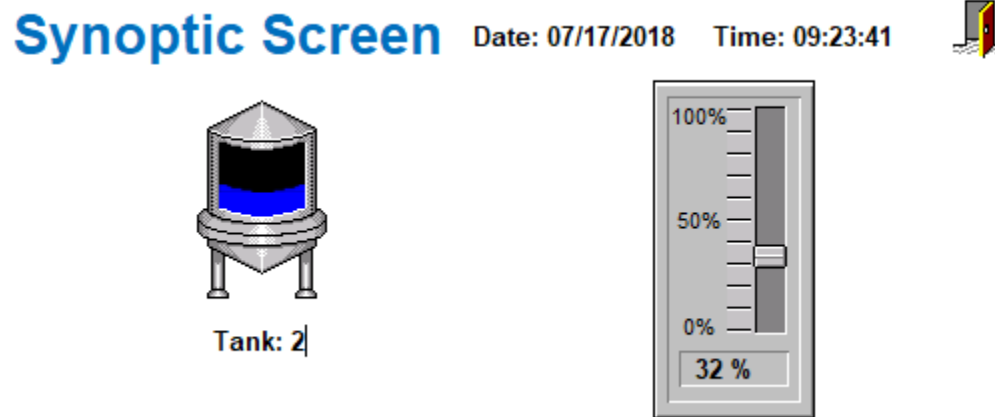


Configuring the "Tank" text input

9. Close the *Object Properties* dialog.

10. Go to **File**, and then select **Save**.

This figure shows how your screen should look after you've created the tank selector object.



Finished tank selector object during run time

Testing the project

This part of the tutorial shows how to test the project again with the animated tank, the level slider, and the tank selector.

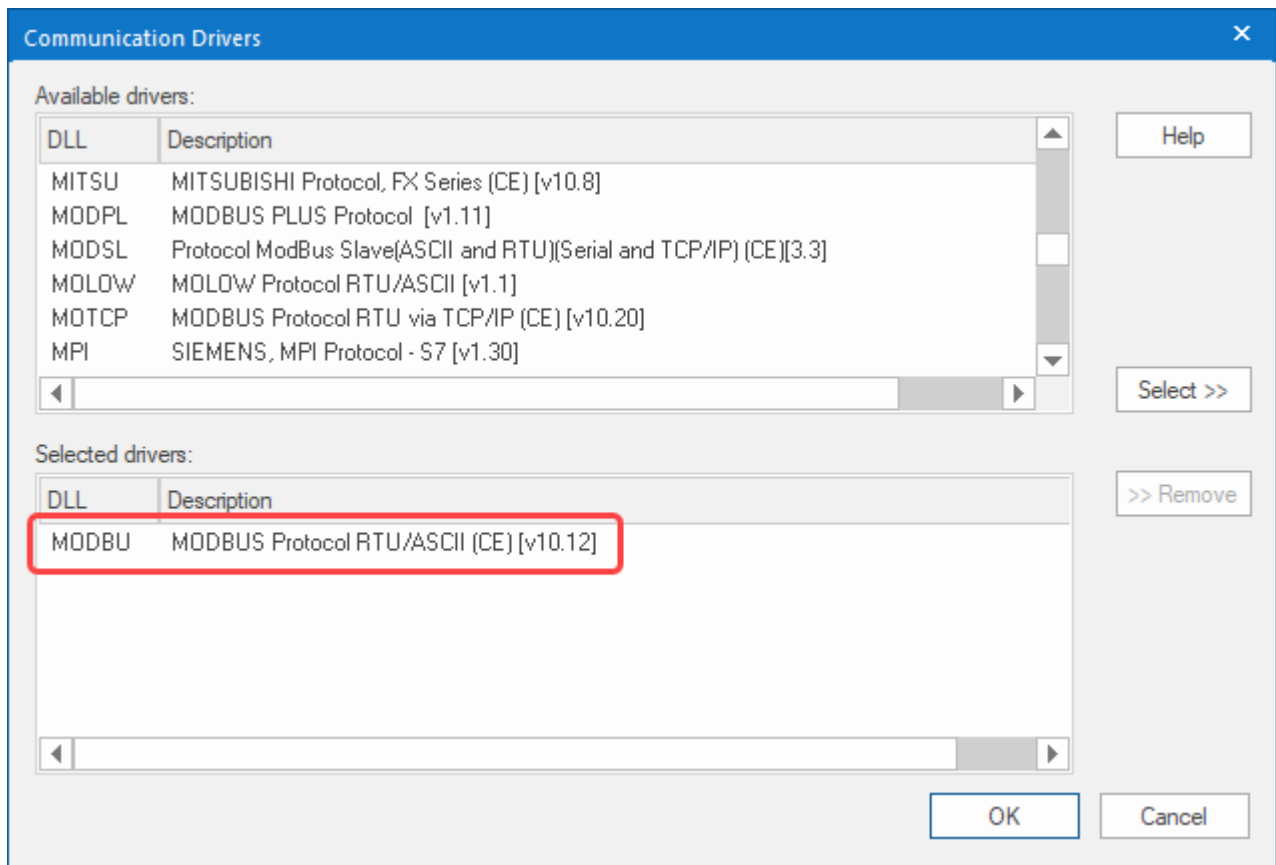
1. Go to **File**, and then select **Close All**.
All open worksheets are closed.
2. On the **Home** tab of the ribbon, in the **Local Management** group, click **Run**.
The project runs and the startup screen is displayed.
3. Click the button to open the synoptic screen.
The synoptic screen is displayed.
4. Type the tank number (1, 2, or 3) in the Tank label, and then use the slider to adjust the tank level.
Note that you can view/adjust the level of each tank independently.
5. Click the exit icon to shut down the project.

If any part of the project does not work as expected, switch back to the development application (**ALT+TAB**) and then click **Stop** on the Home tab of the ribbon.

Configuring the communication driver

This part of the tutorial shows how to select and configure a driver to communicate with an external I/O device.

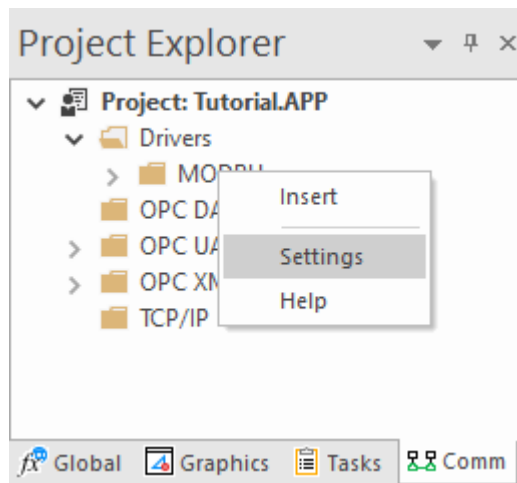
1. In the *Project Explorer*, click the **Comm** tab.
2. Right-click the **Drivers** folder, and then click **Add/Remove Drivers** on the shortcut menu. The *Communication Drivers* dialog is displayed.
3. Select a driver from the **Available drivers** list, and then click **Select**. For this tutorial, select MODBU. The driver is moved to the **Selected drivers** list.



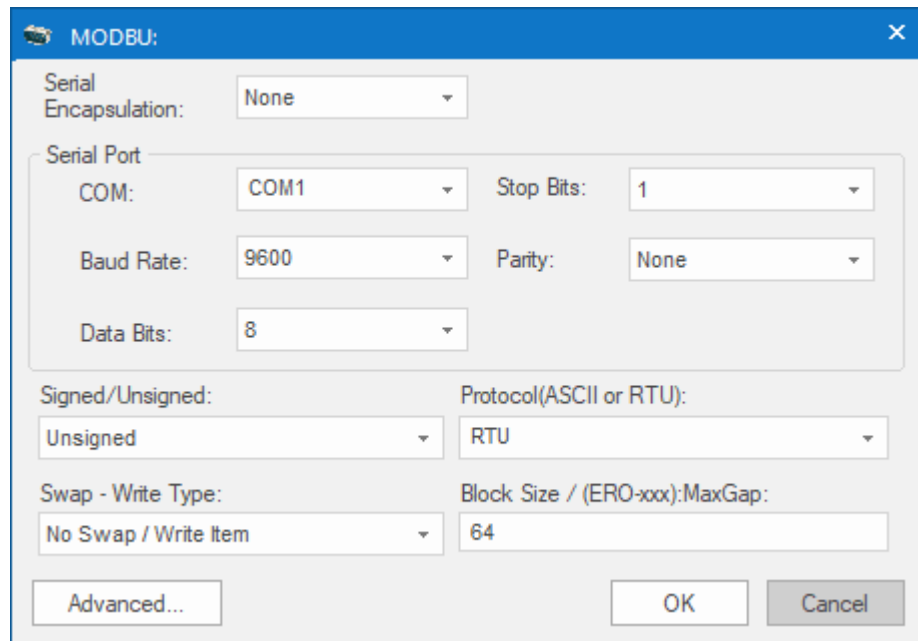
MODBU driver selected

4. Click **OK**. The *Communication Drivers* dialog is closed, and the driver is added to the Drivers folder in the *Project Explorer*.

- In the Project Explorer, right-click the **MODBU** folder, and then click **Settings** on the shortcut menu.




The *Communication Settings* dialog is displayed.



Communication Settings dialog for MODBU driver

- Configure the communication settings as needed for the target device. For this tutorial, accept the default settings.

 **Note:** For more information about a specific driver, click **Communication Drivers** on the **Help** tab of the ribbon.

- Click **OK** to close the dialog.
- In the Project Explorer, right-click the **MODBU** folder and then click **Insert** on the shortcut menu. A new driver worksheet named `MODBU001.drv` is created and opened for editing.
- Configure the worksheet header:
 - In the **Description** box, type `Tutorial Modbus`. This setting is for documentation only; it does not affect the project during run time.
 - In the **Enable Read When Idle** box, type `1`.

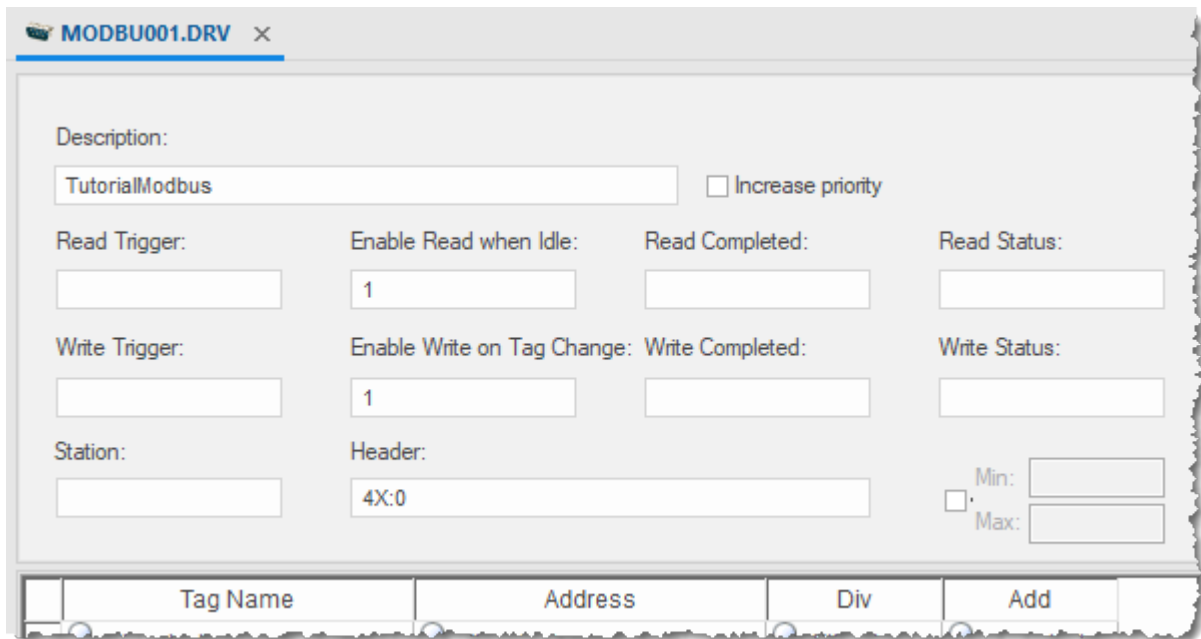
This setting is a trigger that takes a Boolean value. A value of 1 — either entered manually as above or evaluated from a tag/expression — forces your project to continue reading tag values from the target device even when there are no changes in value.

- c) In the **Enable Write On Tag Change** box, type 1.
This setting is also a trigger. A value of 1 forces your project to write tag values to the target device only when those values change, rather than continuously. This saves system resources and improves performance during runtime.
- d) In the **Station** box, type 1.
This indicates the I/O device number to be accessed by this driver. Typically, the PLC is specified as Device #1.
- e) In the **Header** box, type 4X:0.

You must use a driver-specific format. The format for the MODBU driver is:

register_type:initial_offset

| Register Type | Description |
|---------------|------------------|
| 0X | Coil Status |
| 1X | Input Status |
| 3X | Input Register |
| 4X | Holding Register |
| ID | Slave ID Number |



Completed worksheet header

10. In the worksheet body, enter the tags and their associated device addresses — for each tag:
- a) In the **Tag Name** field, type the name of the project tag.
 - b) In the **Address** field, type the value to be added to the header to form the complete device address.

| Tag Name | Address | Complete Device Address |
|-----------|---------|---------------------------|
| Level [1] | 1 | 4X:1 (Holding Register 1) |

| Tag Name | Address | Complete Device Address |
|-----------|---------|---------------------------|
| Level [2] | 2 | 4X:2 (Holding Register 2) |
| Level [3] | 3 | 4X:3 (Holding Register 3) |

| | Tag Name | Address | Div | Add |
|---|-------------|-------------|-------------|-------------|
| | Filter text | Filter text | Filter text | Filter text |
| 1 | Level[1] | 1 | 0.000000 | 0.000000 |
| 2 | Level[2] | 2 | 0.000000 | 0.000000 |
| 3 | Level[3] | 3 | 0.000000 | 0.000000 |
| * | | | | |
| * | | | | |
| * | | | | |
| * | | | | |
| * | | | | |

Completed worksheet body

11. Go to **File**, and then select **Save**.
12. When prompted to choose the driver sheet number, type 1 and then click **OK**.

Monitoring device I/O during run time

This part of the tutorial shows how to monitor device I/O during run time by using the *Log* window.

1. On the **Home** tab of the ribbon, in the **Local Management** group, click **Run**.
The project runs and the startup screen is displayed.
2. Press **ALT+TAB** to switch back to the development application.
3. Right-click in the *Output* window, and then click **Settings**.
The *Log Settings* dialog is displayed.
4. Select the **Field Read Commands**, **Field Write Commands**, and **Protocol Analyzer** options.
5. Click **OK** to close the *Log Settings* dialog.

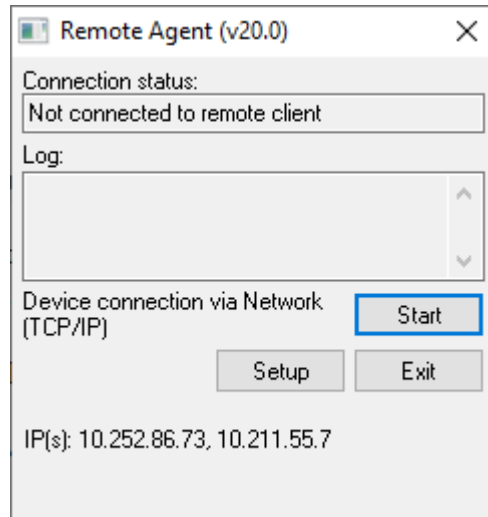
You can now monitor the device I/O during run time.

Downloading your project to a Windows Embedded device

This part of the tutorial shows how to download your project to a Windows Embedded device, such as a plant-floor HMI panel.

After configuring a project and testing it locally (on the development station), you can download it to a remote station — either a Windows PC that is running IWS or a Windows Embedded device that is running Embedded HMI or Compact HMI.

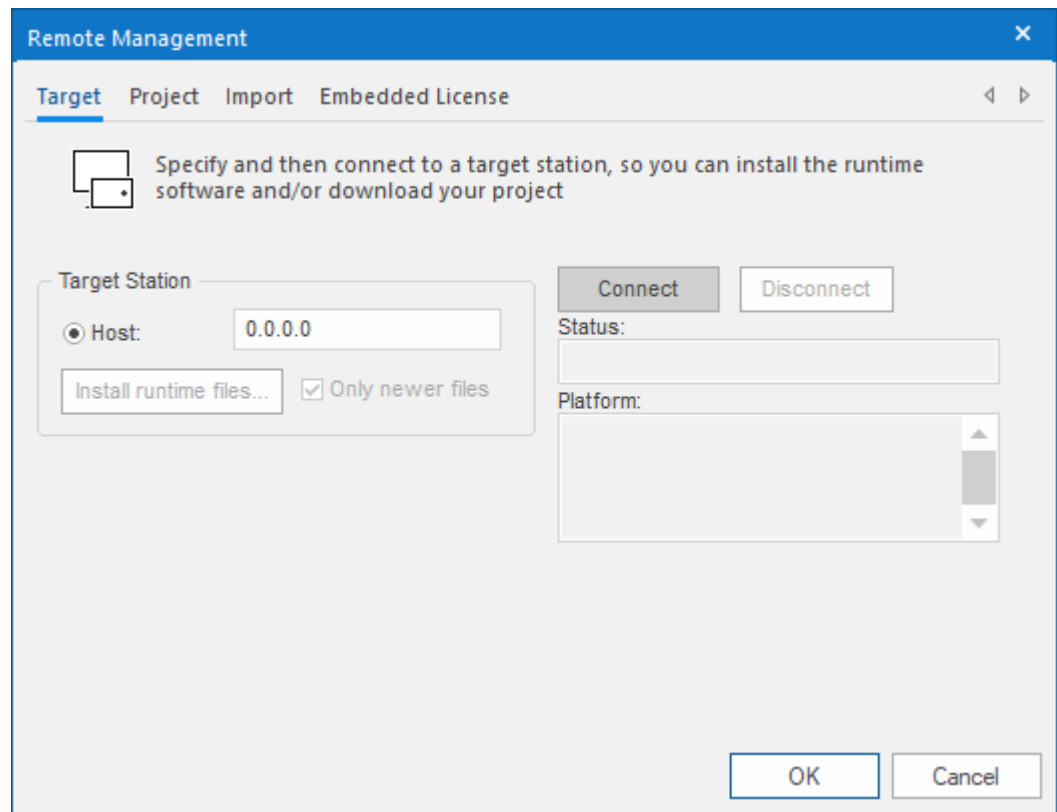
1. On the desktop of the remote station, click **Start > InduSoft Web Studio 2020 > InduSoft Web Studio 2020 Remote Agent**. The Remote Agent utility runs.



Remote Agent utility

2. In the project development environment, click **Connect** on the **Home** tab of the ribbon.

The *Remote Management* dialog is displayed.



Remote Management dialog

3. Select the type of connection to the target (remote) station.
This selection should match the selection you previously made in the Remote Agent utility on the remote station.
4. If you selected **Host**, type the host name or IP address of the remote station.
5. Click **Connect**.
If you successfully connect to the remote station, then information about that station is displayed in the **Status** and **Platform** boxes.
6. If the remote station is a Windows Embedded device, click **Install system files**.
The system files are installed on the remote station.
7. Click the **Project** tab.
8. Click **Download**.
The project files are downloaded to the remote station.
9. Click **Run**.
Your IWS project is run on the remote station.

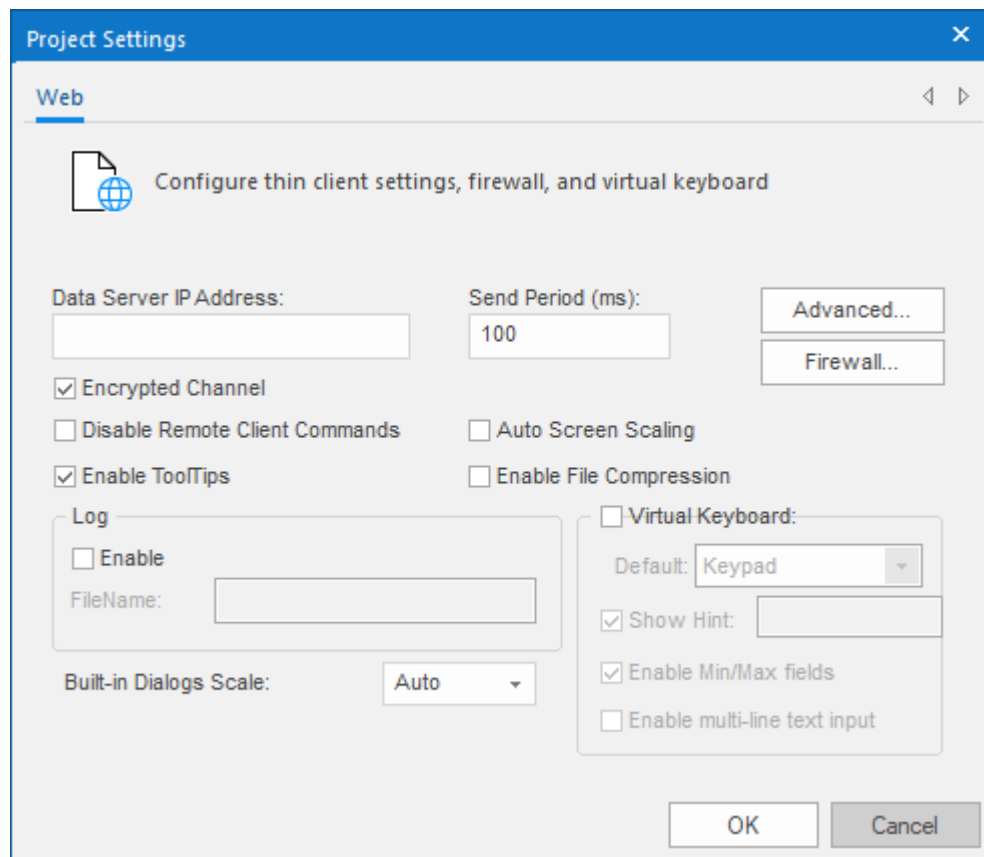
Deploying your project as a web application

This part of the tutorial shows how to deploy your project as a web application, to which remote users can connect with Internet Explorer.

For Internet Explorer to work as a web thin client, it must install a browser plug-in that "plays" IWS project screens. If your computer is connected to the Internet, then IE will automatically download the control from InduSoft's public server when you connect to a project runtime server for the first time.

To deploy your project as a web application:

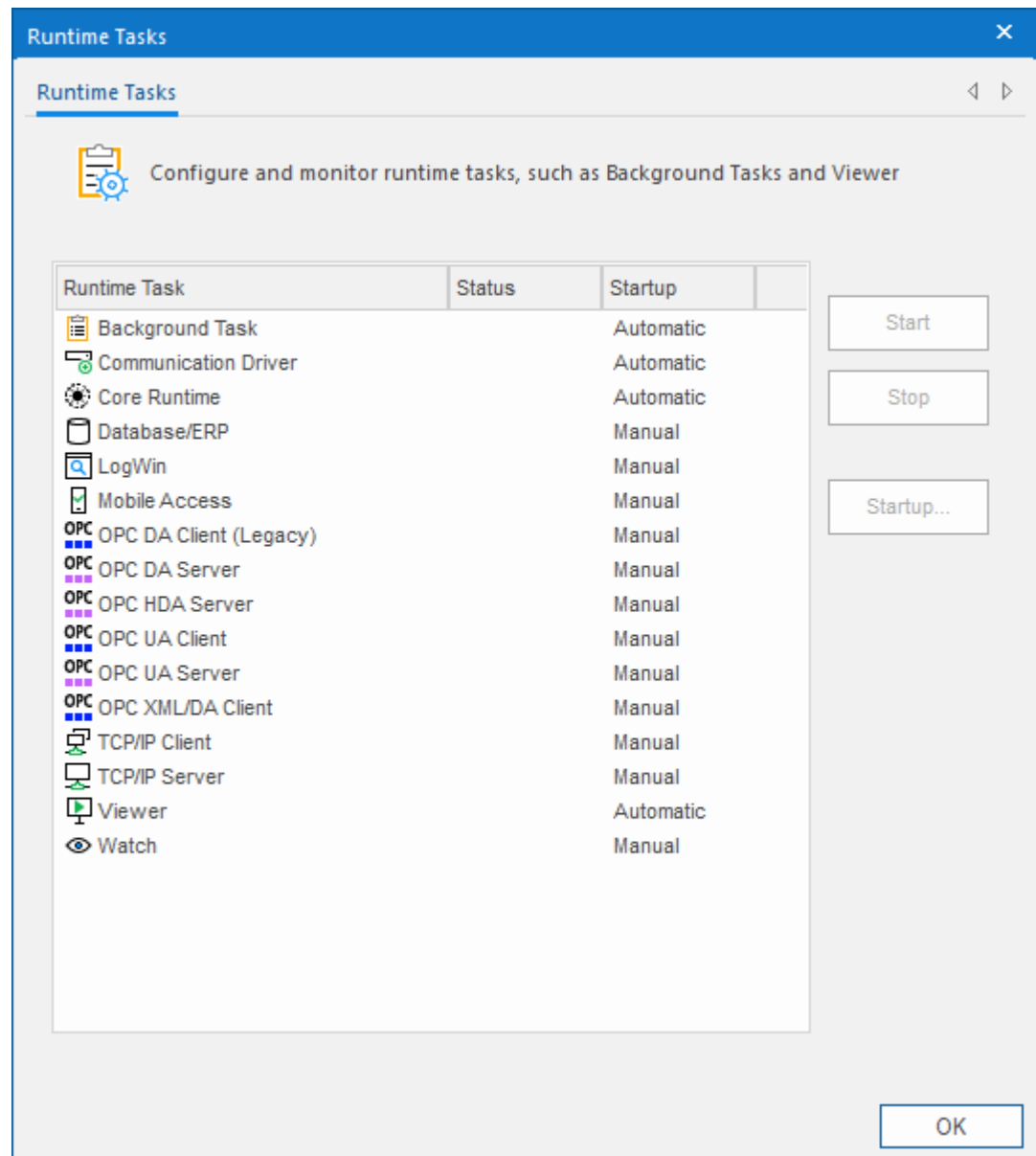
1. Configure the IP address of the data server.
 - a) On the **Project** tab of the ribbon, in the **Web** group, click **Thin Clients**.
The *Project Settings* dialog is displayed with the **Web** tab selected.



Web tab of Project Settings dialog

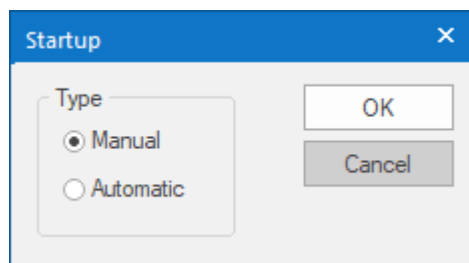
- b) In the **Data Server IP Address** box, type the IP address of the web server.
For this tutorial, type 127.0.0.1, which is the standard loopback address (a.k.a. "localhost").
 - c) Click **OK** to close the dialog.
2. Make sure the data server is set to start up when you run your project.
 - a) On the **Home** tab of the ribbon, in the **Local Management** group, click **Runtime Tasks**.

The *Runtime Tasks* dialog is displayed.




Runtime Tasks dialog

- b) In the list of tasks, select **TCP/IP Server**, and then click **Startup**.
The *Startup* dialog is displayed.



Startup dialog

- c) Select **Automatic**, and then click **OK**.
- d) Click **OK** to close the *Runtime Tasks* dialog.
3. Save and close all open screens and worksheets.
4. Go to **File**, and then click **Save All As HTML**.
Your project screens are saved as HTML files in the Web sub-folder of your project folder (i.e., *project name*\Web).
5. Configure a web server to make the Web sub-folder available to the network.
For this tutorial, use NTWebServer, which is free, lightweight web server program that is included with the InduSoft Web Studio 2020 software. Simply copy it from the Studio program folder (at *InduSoft Web Studio 2020\Bin\NTWebServer.exe*) to your project's Web sub-folder (at *project name*\Web), and then double-click the file to run it. It automatically serves the contents of whatever folder it is in, without any further configuration.

 **Note:** NTWebServer is provided for testing purposes only. It should never be used in a real production environment or on a secure network.

- You can also configure the "root directory" or "home directory" setting of some other web server program (e.g., Microsoft IIS) to point to the Web sub-folder, or you can copy the Web sub-folder to an existing web server on your network. The web server (which makes the HTML files available to clients) and the data server (which actually runs your IWS project and exchanges data with the clients) do not need to be the same computer.
6. On the **Home** tab of the ribbon, in the **Local Management** group, click **Run**.
 7. Open a web browser (e.g., Microsoft Internet Explorer), and then enter the URL address of the synoptic screen on the web server.
For this tutorial, type `http://127.0.0.1/synoptic.html` and then press **Return**. (127.0.0.1 is the standard IP address for the loopback network interface, a.k.a. "localhost".)
After a few moments, during which the browser downloads and installs the browser plug-in, the synoptic screen is displayed in the browser.

Notice that you can change the level of any tank either locally using the project viewer or remotely using the web browser, and changes on one client appear immediately on the other. They work equally well.