

# Software

Supervisory control and data acquisition software (SCADA)

Vijeo Citect



Vijeo Citect

## Presentation



Vijeo Citect™ is the operating and monitoring component of Schneider Electric's PlantStruxure™.

With its powerful display capabilities and its operational features, it delivers actionable insight faster, enabling operators to respond quickly to process disturbances, thereby increasing their efficiency. With its easy-to-use configuration tools and powerful features you can quickly develop and implement solutions for any size application.

Vijeo Citect offers the functions of a modern supervisor. Its distributed client-server architecture is applicable to a multitude of applications in the following markets:

- Oil & Gas
- Mining, Minerals, Metals
- Water & Wastewater
- Power
- Food and beverage

Its flexibility also makes it suitable for numerous other application areas, such as infrastructures.

## Redundancy

Vijeo Citect offers total redundancy for all the components of the system. The redundancy functions are fully integrated in the system, providing exceptional performance and intuitive configuration.

## Server licence

Vijeo Citect is available:

- In a **Client-Server** architecture, for configurations ranging from 75 points to an unlimited number of points
- In a **stand-alone** version called **Vijeo Citect Lite**, for configurations of 100 to 1200 points (see page 36400/6).

Vijeo Citect includes the installation (without registration) of the OFS software, Schneider Electric's integrated OPC server. This server can only be used with Vijeo Citect software.

The OFS software provides access to the structured variables and assists to provide system consistency. This is one of the major benefits of Schneider Electric integration.

Server licences **VJC NS 1011 ●●** are purchased according to the number of points to be processed, not according to the number of I/O (1).

A point expansion offer is also available to increase the number of:

- Client points: **VJC NS 1020 ●●-●●**
- Server points: **VJC NS 1011 ●●-●●**

as required (2).

(1) Vijeo Citect counts all the variables exchanged with external devices, such as PLCs.  
 (2) If the server or client is upgraded, the keys must be reprogrammed.

# Software

## Supervisory control and data acquisition software (SCADA)

### Vijeo Citect

#### Client licences

Four types of Client licence are available:

- **Control Client, VJC NS 1020 ●●**: used by operators accessing the Vijeo Citect server via a local connection
- **View Only Client, VJC NS 1030 ●●**: for users needing to view the Vijeo Citect application via a local connection, but not needing to control the system
- **Web Control Client, VJC NS 1022 ●●**: similar to the Control Client, but via a Web browser
- **Web View Only Client, VJC NS 1032 ●●**: similar to the View Only Client, but via a Web browser.

#### Static, floating and redundant client licences

A Client licence can be static, floating or redundant depending on requirements:

- **Static Client licence**: For operators needing access to the system at all times, irrespective of the number of connections already established by other clients.

A static Client licence provides permanent access to the system, as it physically resides in the key plugged into the client PC.

- **Floating Client licence**: Users who occasionally need to use a Client for operator tasks can purchase Floating licences. Connections will be allowed until the number of valid licences is reached. Floating Client licences are stored on the key plugged into the server.

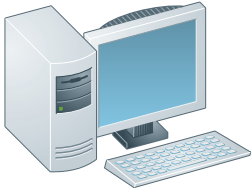
- **Redundant Client licence**: Redundant Client licences **VJC NS 10●● 88** are intended solely for the standby server in a redundant configuration. They are used to ensure that the Client licences purchased are available.

#### Development workshop

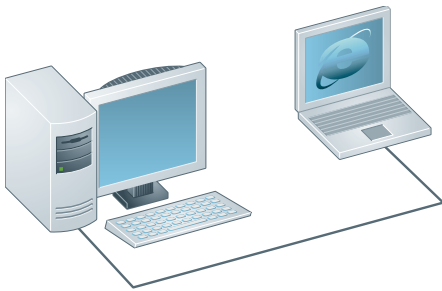
The development workshop **VJC 1099 ●●** comprises hardware components such as the DVD, hardware keys, installation guide and storage boxes.

The rules for use are as follows:

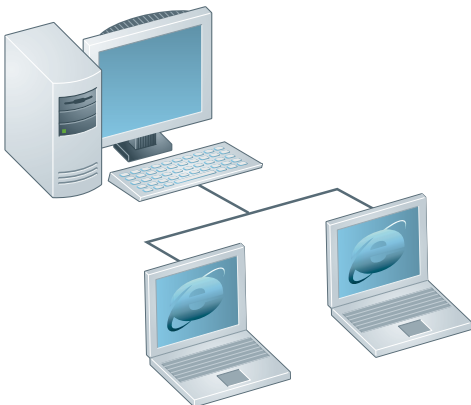
- Each server requires a hardware USB key in order to operate
- The server key is also used to store the floating client licences
- The key controls the number of points that can be used
- The key is programmed to operate up to a predetermined version



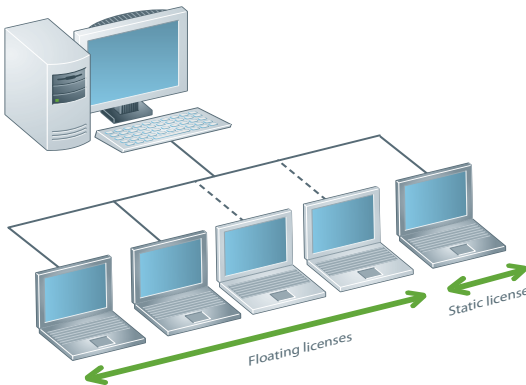
Single-station architecture



Single-server architecture with Web View Only Client access



Single-server architecture with 1 Web Control Client and 1 Web View Only Client



Single-server architecture with 2 floating Control Client licences and 1 static licence

**Architectures**

**Single station stand-alone SCADA system, 5000 points**

**Development workshop**

- 1 x VJC 1099 22, hardware delivery of the DVD with USB key

**Server licence**

- 1 x VJC NS 1011 14, Server licence for 5000 points, including Control Client licence

**Client licence**

- Not required (included in the server licence)

**Remote Server system with remote access via the Web**

**Development workshop**

- 1 x VJC 1099 22, hardware delivery of the DVD with USB key

**Server licence**

- 1 x VJCNS 1011 15, Server licence for 15000 points, including Control Client licence

**Client licence**

- 1 x VJCNS 1032 99, Web View Only Client licence

**Networked Server system with remote Web Clients**

E.g. Networked Server system, 500 points, with 2 remote Clients via the Web, one Web Control Client and one Web View Only Client

**Development workshop**

- 1 x VJC 1099 22, hardware delivery of the DVD with USB key

**Server licence**

- 1 x VJC NS 1011 12, Server licence for 500 points, including Control Client licence

**Client licences**

- 1 x VJC NS 1022 12, Web Control Client licence for 500 points
- 1 x VJC NS 1032 99, Web View Only Client licence

**Networked server system with floating and static access**

E.g. Networked server system, 5000 points, with 5 Client PCs and 3 Client licences, 2 of which are floating and 1 static

**Development workshop**

- 1 x VJC 1099 22, hardware delivery of the DVD with USB key
- 1 x VJC 1099 21, additional USB key for static Client

**Server licence**

- 1 x VJC NS 1011 14, Server licence for 5000 points, including Control Client licence (local Control Client type on the server PC)

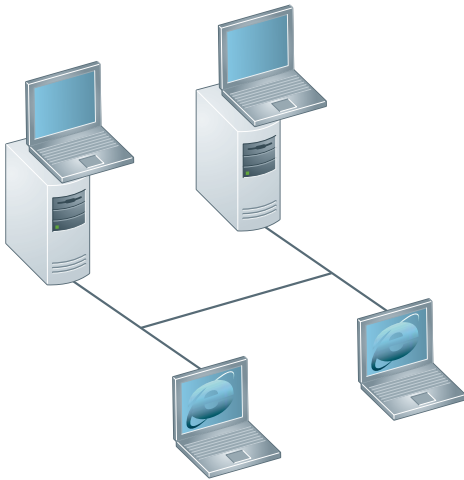
**Client licences**

- 3 x VJC NS 1020 14, Control Client licences for 5000 points

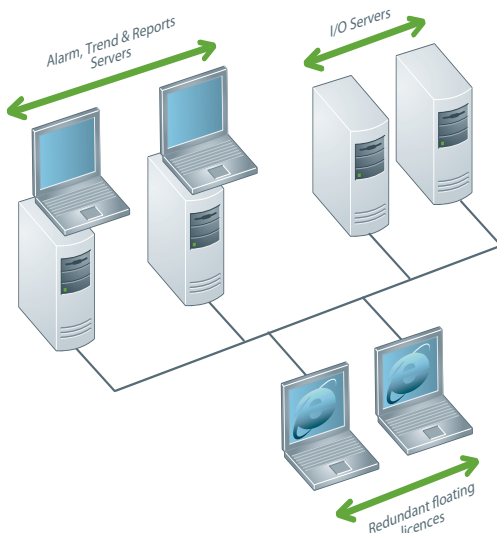
# Software

## Supervisory control and data acquisition software (SCADA)

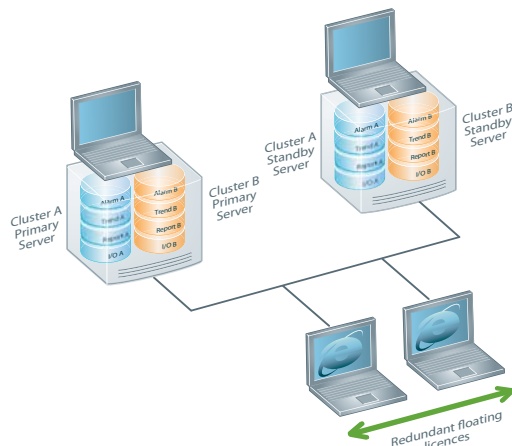
Vijeo Citect



Redundant architecture with 2 Control Clients on servers and 2 Web View Only Clients



Redundant architecture, separate ATR and I/O Servers, with 2 Server Control Clients and 2 Web View Only Clients



Redundant architecture, 2 clusters with 2 Web View Only Clients

### Architectures (continued)

#### Redundant Server with Server Control Clients and Web View Only Clients

E.g. Redundant server, 1500 Points, with 2 Control Client licences on the servers and 2 Web View Only Client licences

#### Development workshop

- 1 x VJC 1099 22, hardware delivery of the DVD with USB key (Primary Server key)
  - 1 x VJC 1099 21, additional USB key (Standby Server key)
- (rule: 1 key per Server)

#### Server licences

- 2 x VJC NS 1011 13, Server licences for 1500 points, including Control Client licences:
  - The first Server acts as the Primary Server
  - The second server acts as the Standby Server
  - One licence is placed on each key (Primary and Standby)

#### Client licences

- 2 x VJC NS 1032 99, Web View Only Client licences
- Both licences are placed on the Primary Server key

#### Redundant Client licence

- 2 x VJC NS 1032 88, redundant Web View Only Client licences
- Floating redundant licences for Web View Only Client licences
- Both licences are placed on the Standby Server key

#### Redundant Alarm, Trend, Reports Servers (1500 points) and redundant I/O Servers (1500 points) with 2 Control Clients and 2 Web View Only Clients

#### Development workshop

- 1 x VJC 1099 22, hardware delivery of the DVD with USB key (Primary Server key)
- 3 x VJC 1099 21, additional USB keys (one per Server) (Standby Server key)

#### Server licence

- 4 x VJC NS 1011 13, Server licences for 1500 points, including Control Client licence:
  - Two pairs of redundant Servers: one I/O Server redundant pair, one ATR Server redundant pair
  - The first Server in each pair acts as the Primary Server
  - The second Server acts as the Standby Server
  - One licence is placed on each key (Primary and Standby)

#### Client licence

- 2 x VJCNS 1032 99, Web View Only Client licences
- Both licences are placed on the ATR Primary Server key

#### Redundant Client licence

- 2 x VJCNS 1032 88, redundant Web View Only Client licences
- Redundant floating licences for Web View Only Client licences

#### Redundant Servers (1500 points) with 2 Logical Server Clusters and 2 Web View Only Clients

#### Development workshop

- 1 x VJC 1099 22, hardware delivery of the DVD with USB key (Primary Server key)
- 1 x VJC 1099 21, additional USB key (one per Server) (Standby Server key)

#### Server licence

- 2 x VJC NS 1011 13, Server licences for 1500 points, including Control Client licence:
  - One pair of redundant Servers, two clusters on each server
  - The first server contains Cluster A (ATR & I/O Server) and Cluster B (ATR & I/O Server) Primary Servers
  - The second server contains Cluster A and Cluster B Standby Servers
  - One licence is placed on each key (Primary and Standby)

#### Client licence

- 2 x VJCNS 1032 99, Web View Only Client licences
- Both licences are placed on the ATR Primary Server key

#### Redundant Client licence

- 2 x VJCNS 1032 88, Redundant Web View Only Client licences
- Redundant floating licences for Web View Only Client licences
- Both licences are placed on the ATR Standby Server key



# Software

## Supervisory control and data acquisition software (SCADA)

### Vijeo Citect



VJC 1099 ●2



#### Development workshop - Vijeo Citect Box and keys

The **VJC 1099 ●2** Vijeo Citect Box comprises:

- 1 DVD with the Vijeo Citect software
- A Schneider Electric drivers pack
- An installation guide
- A hardware key for USB port

Additional keys are also supplied in the Vijeo Citect Box.

#### Development workshop - Vijeo Citect Box

Description	Type of key included	Reference	Weight kg
Vijeo Citect Box with USB key	USB	VJC 1099 22	0.410

#### Additional Vijeo Citect keys

Designation	Target licence	Reference	Weight kg
Additional Vijeo Citect USB key Supplied in Vijeo Citect Box	Redundant Server and static (non-floating) licences	VJC 1099 21	0.200
Vijeo Citect 10 Pack USB keys Supplied in Vijeo Citect Box	Blank keys and not licenced	VJC 1099 20 (1)	1.500

#### Vijeo Citect Software

Designation	Target licence	Reference	Weight kg
Vijeo Citect Software DVD - 50 Pack	Not licenced	VJC 1099 18	2.200



Vijeo Citect

#### Vijeo Citect Lite, stand-alone

The Vijeo Citect Lite stand-alone licence is available for 100 to 1200 points.

The Vijeo Citect Lite licence is a simple solution for stand-alone applications.

Lite licenses cannot connect to any third party software or client stations. Further it cannot be made redundant.

#### Vijeo Citect Lite licence

Designation	Number of points	Reference	Weight kg
Vijeo Citect Lite	100	VJC NS 3011 56	-
Stand-alone: no connectivity	150	VJC NS 3011 11	-
Key to be ordered separately	300	VJC NS 3011 27	-
	600	VJC NS 3011 59	-
	1200	VJC NS 3011 50	-

(1) The 10 Pack Vijeo Citect keys VJC 1099 20 is not programmed.

# Software

## Supervisory control and data acquisition software (SCADA)

### Vijeo Citect



Vijeo Citect

#### Vijeo Citect Lite, stand-alone (continued)

##### Vijeo Citect Lite Point Expansion

The references below are used for increasing the number of Vijeo Citect Lite points available or to upgrade Lite Server to Full Server.

The licence point count expansion is achieved in steps. For example, if a licence is upgraded from 100 points to 600 points, 3 part numbers will be ordered to upgrade from 100 points to 150 points, 150 points to 300 points and 300 points to 600 points.

Designation	Number of points	Reference	Weight kg
<b>Vijeo Citect Lite Point Expansion</b> (number of points)	100 to 150	<b>VJC NS L56-L11</b>	–
	150 to 300	<b>VJC NS L11-L27</b>	–
	300 to 600	<b>VJC NS L27-L59</b>	–
	500 or 600 to 1200	<b>VJC NS L59-L50</b>	–
<b>Vijeo Citect Lite Point Expansion</b> (Lite server to Full server)	Lite 150 to Full 150	<b>VJC NS L11-F11</b>	–
	Lite 300 to Full 500	<b>VJC NS L27-F12</b>	–
	Lite 600 to Full 1500	<b>VJC NS L59-F13</b>	–
	Lite 1200 to Full 1500	<b>VJC NS L50-F13</b>	–

#### Vijeo Citect Server

The Vijeo Citect Server full system licences are segmented according to the number of points.

##### Redundant system

- For a redundant system simply order 2 Vijeo Citect Server licences
- No other option is required for the Servers
- The programmed USB key must be ordered separately

##### Vijeo Citect Server licence

Designation	Number of points	Reference	Weight kg
<b>Vijeo Citect Server</b> Full version Key to be ordered separately	75	<b>VJC NS 1011 10</b>	–
	150	<b>VJC NS 1011 11</b>	–
	500	<b>VJC NS 1011 12</b>	–
	1500	<b>VJC NS 1011 13</b>	–
	5000	<b>VJC NS 1011 14</b>	–
	15000	<b>VJC NS 1011 15</b>	–
	Unlimited	<b>VJC NS 1011 99</b>	–

##### Vijeo Citect Server Point Expansion

The references below are used for increasing the number of points on the Server.

The licence point count expansion is achieved in steps. For example, if a licence is upgraded from 75 points to 1500 points, 3 part numbers will be ordered to upgrade from 75 points to 150 points, 150 points to 500 points and 500 points to 1500 points.

Designation	Number of points	Reference	Weight kg
<b>Vijeo Citect Server Point Expansion</b>	75 to 150	<b>VJC NS 1011 10-11</b>	–
	150 to 500	<b>VJC NS 1011 11-12</b>	–
	500 to 1500	<b>VJC NS 1011 12-13</b>	–
	1500 to 5000	<b>VJC NS 1011 13-14</b>	–
	5000 to 15000	<b>VJC NS 1011 14-15</b>	–
	15000 to unlimited	<b>VJC NS 1011 15-99</b>	–

# Software

## Supervisory control and data acquisition software (SCADA)

### Vijeo Citect

#### Vijeo Citect Control Client

Vijeo Citect Control Client licences are intended for operators. They are segmented according to the number of points to be displayed. There are two types:

- Floating licence, residing on the Server key
- Static licence, requiring a separate key on the client PC.

#### Redundant system

- The number of floating Clients ordered is added to the Primary Server key
- For the Standby Server, the same number of redundant Control Client licences, **VJC NS 1030 88**, must be ordered

Vijeo Citect Control Client licence			
Designation	Number of points	Reference	Weight kg
Vijeo Citect Control Client licence	75	<b>VJC NS 1020 10</b>	–
	150	<b>VJC NS 1020 11</b>	–
	500	<b>VJC NS 1020 12</b>	–
	1500	<b>VJC NS 1020 13</b>	–
	5000	<b>VJC NS 1020 14</b>	–
	15000	<b>VJC NS 1020 15</b>	–
	Unlimited	<b>VJC NS 1020 99</b>	–
Vijeo Citect redundant Control Client licence	Floating licence only	<b>VJC NS 1020 88</b>	–

#### Vijeo Citect View Only Client

Vijeo Citect View Only Client licences are available for users who need to view the application, without controlling it. Licenses for these clients are segmented according to the number of points displayed. There are two types:

- Floating licence, residing on the Server key
- Static licence, the hardware key being plugged into the Client station.

#### Redundant system

- The number of floating Clients ordered is added to the Primary Server key
- For the standby server, the same number of redundant View Only Client licences, **VJC NS 1030 88**, must be ordered

Vijeo Citect View Only Client licence			
Designation	Number of points	Reference	Weight kg
Vijeo Citect View Only Client licence	Unlimited	<b>VJC NS 1030 99</b>	–
Vijeo Citect redundant View Only Client licence	Floating licence only	<b>VJC NS 1030 88</b>	–

# Software

## Supervisory control and data acquisition software (SCADA)

### Vijeo Citect



Vijeo Citect

#### Vijeo Citect Web Control Client

Vijeo Citect Web Control Client licences are intended for users who need full control of the application but prefer the flexibility of access via a Web connection. These client licences are segmented according to the number of points displayed and must be floating type (residing on the key plugged into the server).

#### Redundant system

- The number of floating Clients ordered is added to the Primary Server key
- For the Standby Server, the same number of redundant Web Control Client licences, **VJC NS 1030 88**, must be ordered

#### Vijeo Citect Web Control Client licence

Designation	Number of points	Reference	Weight kg
Vijeo Citect Web Control Client licence	75	<b>VJC NS 1022 10</b>	–
	150	<b>VJC NS 1022 11</b>	–
	500	<b>VJC NS 1022 12</b>	–
	1500	<b>VJC NS 1022 13</b>	–
	5000	<b>VJC NS 1022 14</b>	–
	15000	<b>VJC NS 1022 15</b>	–
	Unlimited	<b>VJC NS 1022 99</b>	–
Vijeo Citect redundant Web Control Client licence	Floating licence only	<b>VJC NS 1022 88</b>	–

#### Vijeo Citect Web View Only Client

Vijeo Citect Web View Only Client licences are intended for users who need to view the application via a Web connection, without controlling the system. These Client licences are segmented according to the number of points displayed and must be floating type (the licences reside on the key plugged into the Server).

#### Redundant system

- The number of floating Clients ordered is added to the Primary Server key
- For the Standby Server, the same number of redundant View Only Client licences, **VJC NS 1032 88**, must be ordered

#### Vijeo Citect Web View Only Client licence

Designation	Number of points	Reference	Weight kg
Vijeo Citect Web View Only Client licence	Unlimited	<b>VJC NS 1032 99</b>	–
Vijeo Citect redundant Web Only Client View licence	Floating licence only	<b>VJC NS 1032 88</b>	–

## Software

### Supervisory control and data acquisition software (SCADA)

#### Vijeo Citect

##### Control Client Point Expansion

The references below are used for increasing the number of points on:

- The Server holding the hardware key, for floating licences
- The Client holding the hardware key, for static licences

The licence point count expansion is achieved in steps. For example, if a licence is upgraded from 75 points to 1500 points, 3 part numbers will be ordered to upgrade from 75 points to 150 points, 150 points to 500 points and 500 points to 1500 points.

##### Vijeo Citect Control Client Point Expansion

Designation	Number of points	Reference	Weight kg
Vijeo Citect Control Client Point Expansion	75 to 150	VJC NS 1020 10-11	–
	150 to 500	VJC NS 1020 11-12	–
	500 to 1500	VJC NS 1020 12-13	–
	1500 to 5000	VJC NS 1020 13-14	–
	5000 to 15000	VJC NS 1020 14-15	–
	15000 to unlimited	VJC NS 1020 15-99	–

##### View Only Client Point Expansion

The reference below is used for increasing the number of points on:

- The Server holding the hardware key, for floating licences
- The Client holding the hardware key, for static licences

##### Vijeo Citect View Only Client Point Expansion

Designation	Number of points	Reference	Weight kg
Vijeo Citect View Only Client Point Expansion	Unlimited	VJC NS 1030 99-99	–

##### Web Control Client Point Expansion

The references below are used for increasing the number of points on the Server holding the hardware key.

##### Vijeo Citect Web Control Client Point Expansion

Description	Number of points	Reference	Weight kg
Vijeo Citect Web Control Client Point Expansion	75 to 150	VJC NS 1022 10-11	–
	150 to 500	VJC NS 1022 11-12	–
	500 to 1500	VJC NS 1022 12-13	–
	1500 to 5000	VJC NS 1022 13-14	–
	5000 to 15000	VJC NS 1022 14-15	–
	15000 to unlimited	VJC NS 1022 15-99	–

##### Web View Only Client Point Expansion

The reference below is used for increasing the number of points on the Server holding the hardware key.

##### Vijeo Citect Web View Only Client Point Expansion

Designation	Number of points	Reference	Weight kg
Vijeo Citect Web View Only Client Point Expansion	Unlimited	VJC NS 1032 99-99	–

##### Connections, miscellaneous

The references below are used to expand the connection licences.

Designation	Reference	Weight kg
OPC Server licence	VJC 1041 88	–
CtAPI licence	VJC 1042 88	–



# Software

## Supervisory control and data acquisition software (SCADA)

### Vijeo Citect



Vijeo Citect

#### Vijeo Citect - Specific drivers

The Vijeo Citect offer includes a large number of drivers as standard. However, for copyright reasons, some drivers have a specific reference and must be ordered separately.

The purchase of a specific driver includes access to the appropriate technical support for the driver for one year.

Designation	Protocol	Reference	Weight kg
Vijeo Citect specific driver	IEC 60870-5-104	VJC NS 3051 41	–
	PSDirect ETH	VJC NS 3051 40	–
	PSDirect MPI	VJC NS 3051 42	–

**Note:** Before ordering a Vijeo Citect specific driver, please contact our Customer Care Centre.

#### Reprogramming for a Vijeo Citect licence transfer

Each time a licence has to be transferred from an existing key to another key, transfer fees are applicable and the reference **VJC 1094 01** must be ordered (licence transfer token).

Examples of cases in which these fees are applicable:

- Transfer of a Client licence from a static key to a floating licence on a Server
- Transfer of an existing floating licence to a new static key

These fees are also applicable when transferring licence(s) to a replacement key.

If a new key is required, you must order a new hardware key **VJC 1099 ●●**.

Designation	Reference	Weight kg
Reprogramming for Vijeo Citect licence transfer	VJC 1094 01	–

#### Driver Development Kit

The driver development kit includes:

- The latest release of Vijeo Citect, example source code, utilities and other Vijeo Citect files required in developing a Citect driver.
- A hardware key that will allow runtime up to 8 hours and is a 42,000 pt. single user licence.
- Access to “Citect Drivers Developers” area on Citect DriverWeb at [scadasupport.citect.com/driverweb](http://scadasupport.citect.com/driverweb).

Designation	Reference	Weight kg
Driver Development Kit	VJC 1092 06	–

# Software

## Supervisory control and data acquisition software (SCADA)

### Vijeo Citect

#### Conversion of third-party applications

Conversion tools help to convert legacy applications (such as Monitor Pro) or other third-party applications to Vijeo Citect. These programs convert the tag database and graphic information to make them compatible with Vijeo Citect :

■ **Page Import** tool is targeted at customers who wish to perform the entire engineering portion of the legacy system migration themselves. The systems integrators are required to perform the engineering themselves.

■ **Basic Sytem Conversion** tool is targeted at customers who want the new system to simply replace the legacy system without major changes. It includes an initial generic engineering component to produce a fully compiled Vijeo Citect project that is ready for Factory Acceptance Tests.

More details of the coverage provided by these conversion tools can be found in our internet site [www.schneider-electric.com](http://www.schneider-electric.com).

Designation	Legacy System supported	Reference	Weight kg
<b>Basic System Conversion</b> (minimum 10 pages)	Tier 1 (1)	<b>VJC 1090 81</b>	–
	Tier 2 (2)	<b>VJC 1090 82</b>	–
	Tier 3 (3)	<b>VJC 1090 83</b>	–
<b>Page Import</b> (minimum 10 pages)	All Tiers	<b>VJC 1090 88</b>	–

#### Loan of Vijeo Citect keys (4)

Designation	Content	Reference	Weight kg
<b>Loan of single Vijeo Citect key</b>	- 1 Server licence, unlimited number of points, VJC NS 1011 99 - 1 Scheduler, VJC 9032 88	<b>VJC 1095 11</b>	–
<b>Loan of multiple Vijeo Citect keys</b>	- 1 Server licence, unlimited number of points, VJC NS 1011 99 - 5 Floating Control Client licences, VJC NS1020 99 - 5 Floating View Only Client licences, VJC NS1030 99 - 2 Floating Web Control Client licences, VJC NS1022 99 - 2 Floating Web View Only Client licences, VJCNS1032 99 - 1 Scheduler, VJC 9032 88	<b>VJC 1095 12</b>	–

(1) Tier 1 = FactoryLink 5 to 6.x, MonitorPro 2, Fix32, Genesis32, Cimplicity, Moore APACS, Wonderware 5.x to 9.x.

(2) Tier 2 = iFIX 3.5, Delta V (Fix32 & iFIX 3.5), RSView32 6.4, FactoryLink 7.5, MonitorPro 7.2 & 7.6, VijeoLook 2.6, WinCC 6.0, Wizcon.

(3) Tier 3 = iFIX 4.5, DeltaV (iFIX 4.5), Telvent OASyS DNA / 6.x, Telvent OASyS 5.x, Telvent Vector (RTView & Ovision), Honeywell TDC3000, Vigile.

(4) Available for customers requiring temporary access to a key. The hardware key must be returned at the end of the loan period. Provides eight days' continuous use. Also requires an additional Vijeo Citect Box USB key, **VJC 1099 ●●**, to obtain the hardware key. The quantity corresponds to the number of months of the loan.

# Software

## Supervisory control and data acquisition software (SCADA)

### Vijeo Citect



Vijeo Citect

#### Vijeo Citect training

Schneider Electric offers a suite of Educational Services designed for end users, engineers, systems integrators and educational establishments. Our courses and programs provide you with hands-on experience, leaving you feeling confident enough to design and configure your own system using Vijeo Citect. Courses include instructor-led, online, self-paced and onsite offerings.

These courses have been developed to assist customers in achieving maximum productivity from using Vijeo Citect.

#### Training Manuals

Designation	Reference	Weight kg
Vijeo Citect Configuration Training Manual - EN	VJC 1093 10-02-00	–
Vijeo Citect CICODE Training Manual - EN	VJC 1093 20-02-00	–
Vijeo Citect Architecture and Redundancy Training Manual - EN	VJC 1093 30-02-00	–
Vijeo Citect Upgrade Training Manual - EN	VJC 1093 50-02-00	–
Vijeo Citect Customization Training Manual - EN	VJC 1093 70-02-00	–
Vijeo Citect Diagnostics and Troubleshooting Manual - EN	VJC 1093 90-02-00	–

#### Self-Paced Training Kits

Designation	Reference	Weight kg
Vijeo Citect Configuration SPTK - EN	VJC 1093 10-01-00	–
Vijeo Citect CICODE SPTK - EN	VJC 1093 20-01-00	–
Vijeo Citect Customization SPTK - EN	VJC 1093 70-01-00	–

#### E-Learning

Designation	Reference	Weight kg
Vijeo Citect SCADA Overview	VJC 3093 31-00-00	–

#### Exams

Designation	Reference	Weight kg
Vijeo Citect Configuration Exam	VJC 3093 50-00-00	–
Vijeo Citect CICODE Fundamentals Exam	VJC 3093 51-00-00	–
Vijeo Citect Architecture and Redundancy Exam	VJC 3093 52-00-00	–
Vijeo Citect Customization and Design Exam	VJC 3093 53-00-00	–
Vijeo Citect Upgrade Exam	VJC 3093 54-00-00	–
Vijeo Citect Examination Re-sit	VJC 3093 55-00-00	–
Vijeo Citect Diagnostics and Troubleshooting Exam	VJC 3093 56-00-00	–

#### Academic Agreements

The references below are intended for educational institutions for training students in Vijeo Citect.

Designation	Reference	Weight kg
Vijeo Citect Academic Agreement - 12 months (10 keys) (1)	VJC 3093 17	–
Vijeo Citect Academic Agreement - 12 months renewal (10 keys) (1)	VJC 3093 22	–

(1) Academic Agreements must be included with each order for the logistics team in Sydney to process the order. Any incomplete orders (with no Academic Agreement) will be rejected. This is only for tertiary education institutions. Licenses are valid for 12 months, each agreement must be renewed every year.

### Presentation



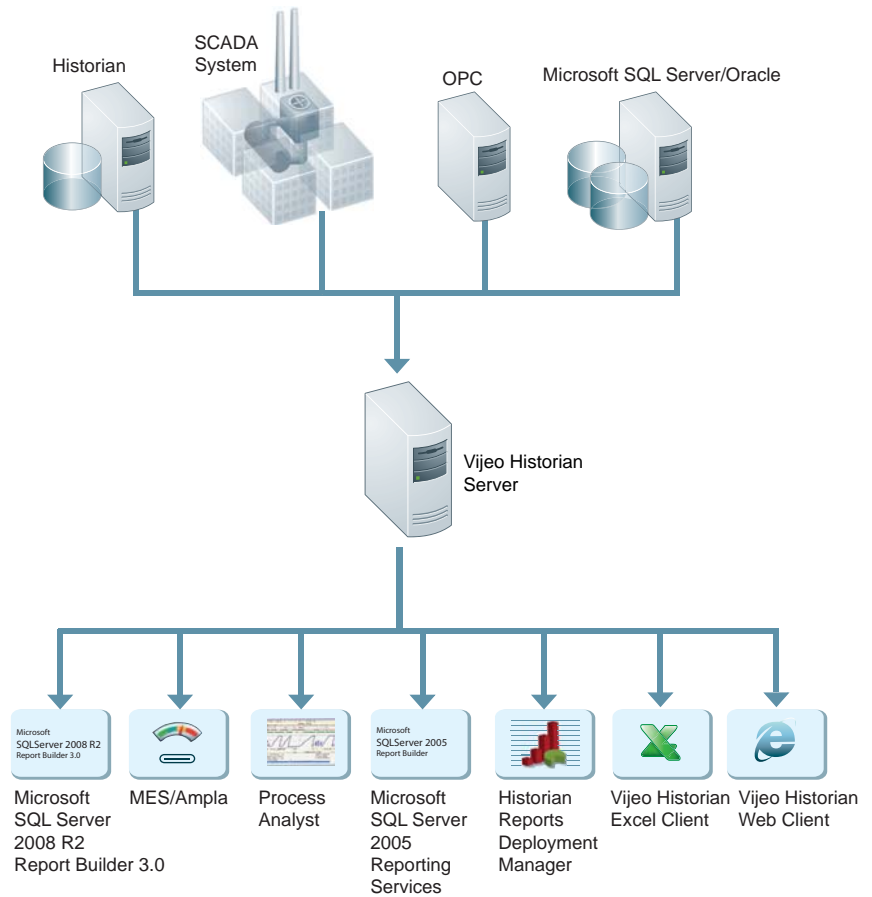
Vijeo Historian

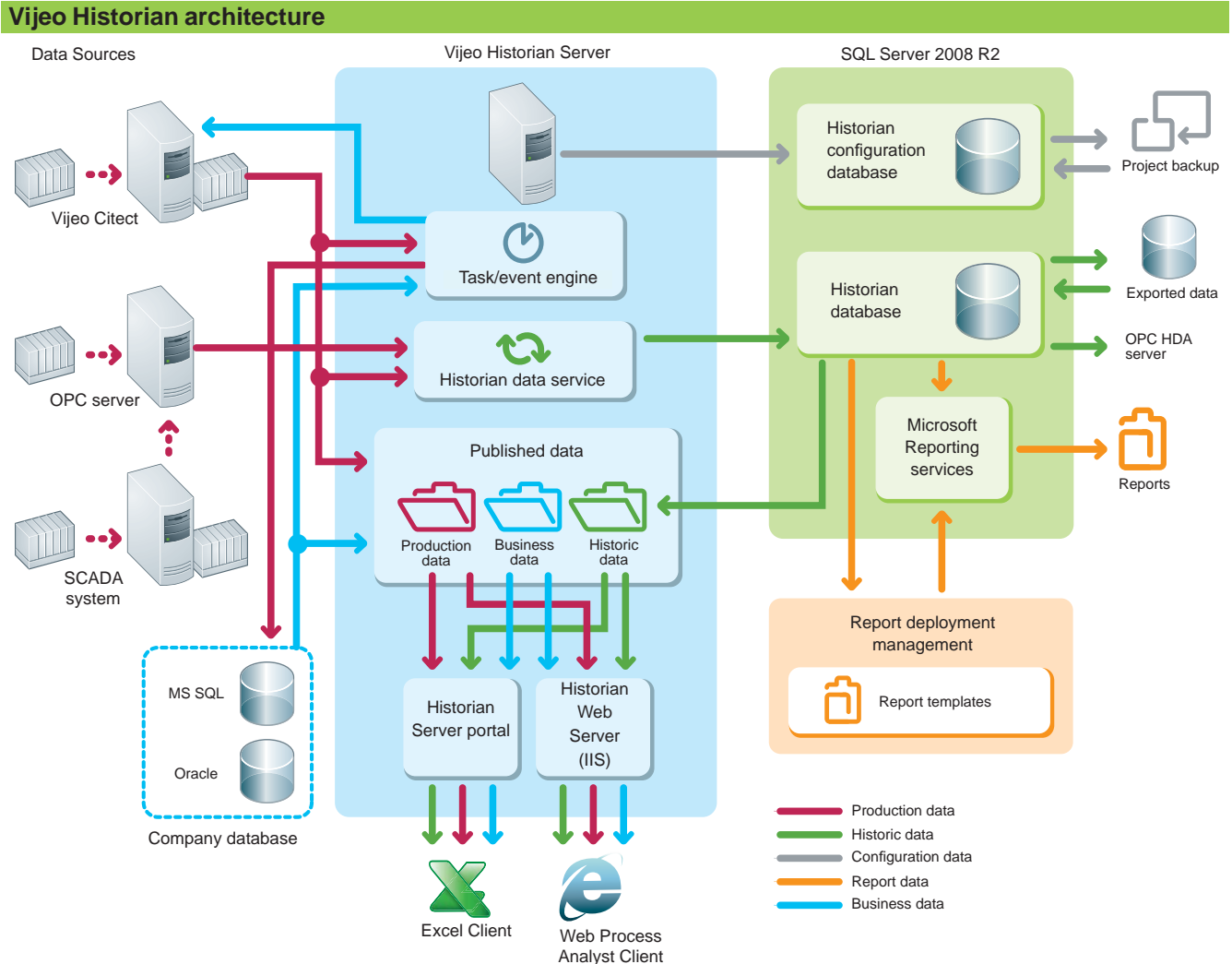
Vijeo Historian™ is the information management component of Schneider Electric's PlantStruxure™. It comprises of the historian and portal functions of the solution, enabling you to store data accurately for long-term reporting while connecting your production and business systems through its active data transfers and simple, easy-to-use reporting functions.

Vijeo Historian helps your plant and your IT personnel optimize their operational efficiency by providing a powerful enterprise-wide reporting tool that collects, stores and delivers meaningful reporting data from multiple disparate systems.

Comprising of historian and portal functionalities, Vijeo Historian enables you to store data accurately for long-term reporting whilst also giving you the option of displaying and accessing the information via the Vijeo Historian portal, Microsoft (TM) Excel, Microsoft Reporting Services or Microsoft Report Builder 3.0.

### Visualization





## Functions

### Applications

- Business managers can access meaningful, concise production system information from the plant floor in a familiar format they use for their financial or other business reports, to help them make strategic decisions to optimize operational performance.
- Plant managers can drill down into information or problem areas to improve production efficiency or reduce spurious alarms.
- Corporate and plant personnel can quickly and easily create and access meaningful reports in a familiar format and create a single view of operation.

### Data sources supported

Vijeo Historian supports the following data sources:

- Vijeo Citect SCADA servers: CitectSCADA 7 or later
- OPC Clients: OPC DA V2, OPC DA V3
- Oracle V8 or later
- Microsoft SQL Server 2005 or later

### Vijeo Historian Web Client and Excel Client

Vijeo Historian also provides two client tools to make it easier to view and manage the information issued by the Historian Server:

- Using the **Web Client** you can display plant information from your control systems and the historian via the Intranet/Internet simply by using a browser such as Internet Explorer.
- The **Excel Client** can also access linked information from the SCADA system or the historian directly in Microsoft Excel. The Excel Client user can select from the same plant hierarchy as the Web Client and request the values of any item within the tree structure.

### Security

Once logged on, users can only access the published folders, data and Favourites for which they have permission. Passwords are encrypted and user privileges are validated for data requests.

### Licence keys

The licences are programmed on a USB or parallel key, which is plugged into the PC running the Vijeo Historian software.





Vijeo Historian

### Development Workshop

The Vijeo Historian Box includes:

- Vijeo Historian DVDs including OPC/HDA Server and Reports Deployment Manager
- A booklet
- Hardware key.

The software can be downloaded from our website [www.schneider-electric.com](http://www.schneider-electric.com).

The Vijeo Historian Box is needed for delivery of the hardware key.

Additional keys will be shipped in the Vijeo Historian Box.

The key can be programmed for Vijeo Historian, Vijeo Citect or both.

We recommend using a separate key for Vijeo Citect and Vijeo Historian.

Description	Type of key included	Reference	Weight kg
Vijeo Historian Box with USB key	USB	VJH 2099 22	–
Vijeo Historian Box with parallel key	Parallel	VJH 2099 12	–
Vijeo Historian 10 Pack with USB key	USB	VJH 2099 20 (1)	–
Additional USB key	USB	VJH 2099 21 (2)	–
Additional parallel key	Parallel	VJH 2099 11 (2)	–

### Loan license

Description	Content	Reference	Weight kg
Vijeo Historian Loan licence	<ul style="list-style-type: none"> <li>■ 1 x VJH NS 2110 15 Vijeo Historian 15000 points and Data transfer licence</li> <li>■ 5 x VJH NS 2122 00 Portal Only Client Access Licence (CAL)</li> <li>■ 5 x VJH NS 2120 00 Historian Only Client Access Licence (CAL)</li> <li>■ 5 x VJH NS 2043 20 Microsoft SQL Database Connector (1 per database system)</li> </ul>	VJH 2095 03	–

### Vijeo Historian and Data Transfers

The Vijeo Historian and Data transfer licences are based on the amount of data being stored. The number of points is the maximum number of tags being logged and stored in the system. The number of alarms stored is unlimited, i.e. 150 tags stored - VJH NS 2110 11.

Description	Number of points	Reference	Weight kg
Vijeo Historian and Data transfer licences	150	VJH NS 2110 11	–
	500	VJH NS 2110 12	–
	1500	VJH NS 2110 13	–
	5000	VJH NS 2110 14	–
	15000	VJH NS 2110 15	–
	50000	VJH NS 2110 16	–

### Vijeo Historian and Data Transfer upgrade

The references below are used for increasing the number of points on the Vijeo Historian and data transfer licences.

Description	Number of points	Reference	Weight kg
Vijeo Historian and Data transfer upgrade licences	150 to 500	VJH NS 2110 11-12	–
	500 to 1500	VJH NS 2110 12-13	–
	1500 to 5000	VJH NS 2110 13-14	–
	5000 to 15000	VJH NS 2110 14-15	–
	15000 to 50000	VJH NS 2110 15-16	–
	50000 to 100000	VJH NS 2110 16-45	–
	100000 to unlimited	VJH NS 2110 45-99	–

(1) Contains 10 individual Vijeo Historian Boxes (10 x VJH 2099 22).

(2) Additional keys must include a Vijeo Historian Box (VJH 2099 22 or VJH 2099 12).



Vijeo Historian

### Client Acces Licenses (CALs)

Data from the Historian can be viewed in several ways:

- **Portal CALs:** Portal CALs are required to use the Web and Excel Clients provided with the Historian. These CALs can be ordered either per user/device or per server (CPU).
- **Historian CALs:** Historian CALs are NOT required if a site purchases Microsoft SQL Server 2008 R2 independently. If a site uses the MS SQL Server 2008 R2 shipped with Vijeo Historian, then Historian CALs are required under the following circumstances:
  - Using any of the standard reports with Historian Reports Deployment Manager
  - Accessing the Historian using Microsoft Reporting Services
  - Using the Web or Excel Clients
  - Accessing the Historian via Stored Procedures or SQL queries
  - Any direct or indirect (via other applications) to access Historian data

#### Client Access License per user/device

Description	Reference	Weight kg
Historian and Portal - Client Access License (CAL)	VJH NS 2124 00	–
Portal Only - Client Access License (CAL)	VJH NS 2122 00	–
Historian Only - Client Access License (CAL)	VJH NS 2120 00	–

#### Client Access License per CPU

Historian and Portal Server CAL per server CPU	VJH NS 2125 00	–
Portal Only Server CAL per server CPU	VJH NS 2123 00	–
Historian Server CAL per server CPU	VJH NS 2121 00	–

### Control system connectors

Data can be collected from:

- Vijeo Citect: Unlimited connections included
- OPC DA: Reference **VJH NS 2043 23** ordered per connection. Historian database can be connected to other databases for up/downloading.
- SQL Connector: One MS SQL Server connector included. Additional SQL connectors **VJH NS 2043 20** ordered separately.
- Oracle connector **VJH NS 2043 21**

Connectivity can be made to Ampla or any MES system using OPC/HDA Client. Vijeo Historian has an OPC/HDA server included free.

Description	Reference	Weight kg
Microsoft SQL Database connector (1 per database system)	VJH NS 2043 20	–
Oracle Database connector (1 per database system)	VJH NS 2043 21	–
OPC DA connector V2 and V3 (1 per database system)	VJH NS 2043 23	–

### License transfer reprogramming

Every time a licence is transferred from an existing key to another key, the licence transfer fee is charged.

Examples of when this fee is applied include:

- Transfer of a licence from one key to another
- Removal of a licence from an existing key (when not transferring to another key)
- Re-issue of licence for a replacement key.

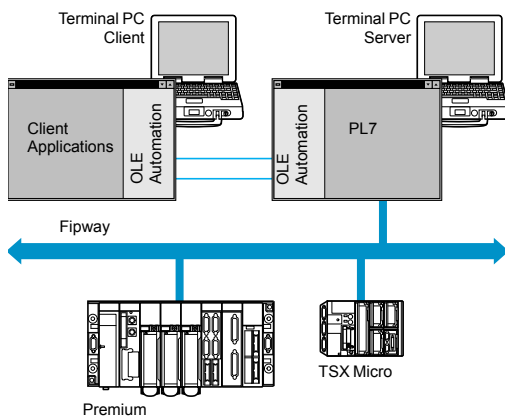
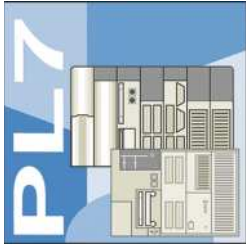
Removal or downgrade (licence type or point count) of licences on a key will require a key swap where a new key is issued and the existing key must be returned. Removal or downgrade of a licence does not provide any refund or credit.

When moving a licence to an existing key that already contains a licence (or licences), the licence being moved must be the same point count as the existing licence.

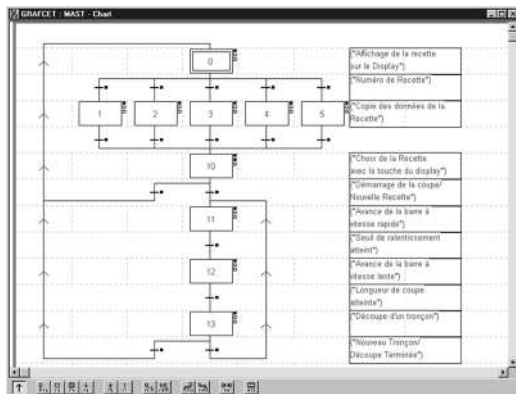
**Note:** When placing an order, please indicate the key numbers and details in the special instructions.

**Note:** This provides only a new authorization code. If a new key is required then you also need to purchase a new hardware key (**VJC 1099 ●●**).

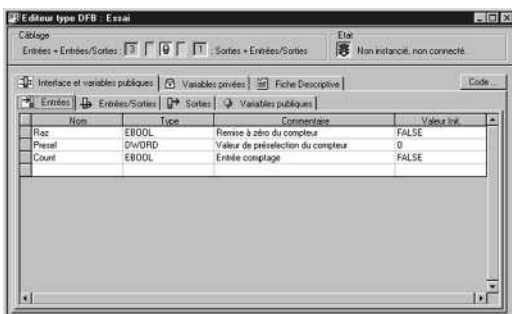
Description	Reference	Weight kg
License transfer fee	VJC 1094 01	–



Operation in application server mode



Grafcet SFC language graphic editor



DFB type editor

### Presentation

PL7 Micro/Junior/Pro software is designed for Windows 2000, XP, Vista and 7 (all 32-bit) operating systems (1) and, therefore, benefits from all the facilities associated with these operating systems.

The main functions of PL7 software are:

- User-friendliness and productive using contextual menus, context-sensitive help, info balloons, etc.
- Multi-instance, enabling several applications to be worked on simultaneously
- Management of access rights, for limiting and controlling the use of the various PL7 software functions
- Application server. The PL7 Pro software can be launched in OLE Automation server mode from a third-party client application. In this case, certain functions of the PL7 software can be executed following commands sent by an OLE client application

The main functions compared to the previous version V4.4 are:

- Development of the equipment catalogue
- Enhancement of the application data export files (FEF), for better compatibility with the Unity Pro software suite integration

### Functions

#### Four IEC languages

The four graphical or textual languages available in PL7 are used for programming Modicon Premium and TSX Micro automation platforms.

The two graphical languages are:

- Ladder (LD)
- Sequential Function Chart (SFC) or Grafcet

The two textual languages are:

- Structured Text (ST)
- Instruction List (IL)

For these 4 languages, you can use the standard set of instructions compliant with IEC standard 61131-3 to create applications, which can be transferred from one platform to another. PL7 software also provides extensions to this standard set of instructions. As they are specific to Modicon Premium and TSX Micro PLCs, these extensions support the development of more complex applications in order to maximize the potential of the specific features of each of these platforms.

#### User DFB function blocks (only with Premium)

The user can create their own function blocks for specific application requirements, with Premium PLCs, using PL7 Pro software. Once the function blocks have been created in a library, they can be used with PL7 Junior/Pro software.

These user function blocks can be used to structure an application. They are used when a program sequence is repeated several times in the application or for freezing a standard programming routine. They can be exported to all other PL7 applications.

Using a DFB function block in one or more applications:

- Simplifies program design and entry
- Increases program legibility
- Facilitates program debugging (all variables handled by the DFB function block are identified on its interface)
- Enables the use of internal variables specific to the DFBs, which are independent of the application

(1) Compatibility with Windows 95, 98, Millenium and NT4.0 is no longer assured. For information, Windows 95 and Windows NT 4.0 cannot manage USB ports.

Repère	Symbole / Nom	Valeur courante	Nature
%M16	Trig_vid_melang	0	
%M17	Trig_tempo	0	
%M18	Status_ogole	1	
%M19	Synchro_1	0	
%M20	Cycle	0	
%M21	Raz	0	
%M52	Trig_sect_vidan	1	
	Gest_prod_silo_a		
	Gest_prod_silo_a_Presel	2#0000 0000 0000 0000 00	IN
	Gest_prod_silo_a_Count	0	IN
	Gest_prod_silo_a_Done	1	OUT
	Gest_prod_silo_a_Val_cou	16#00000007	PUBLIC

Animation table

Adresse	Usage	IO
MAST-FunctioPur-ICP4	R	I
MAST-FunctioPAB01003-ICP	R	I
MAST-FunctioPAB01003-OP	V	I
MAST-FunctioPemporage-ICP	R	I
MAST-FunctioPemporage-OP	V	I

Cross-referencing of variables

## Functions (continued)

### Debugging tools

PL7 Micro/Junior/Pro software offers a complete set of tools for debugging applications. A tool palette provides direct access to the main functions:

- Setting breakpoints
- Step-by-step program execution
- Independent execution of the master (MAST), fast (FAST) and event-triggered (EVTi) tasks

Other functions available are:

- Animation of program elements when the PLC is in RUN
- Creation of animation tables containing the parameters or variables to be monitored or modified
- Debugging of DFB function blocks via the animation tables
- Debugging of Graficets in online mode
- Debugging of application-specific functions
- Access to general diagnostics of the modules or of each channel (1)

### Diagnostics integrated in Modicon Premium platforms

The diagnostics offer for the Premium platform is based on three components:

- System diagnostics
- Diagnostic function blocks (DFBs), for system and application diagnostics
- Error message display system, called viewers, supplied as a standard component of Advanced Panel Magelis XBT G●, Magelis iPC Panel PC/BOX PC with Vijeo Designer/Monitor Pro software and PL7 Pro programming software.

### Cross-referencing of variables

For every variable, this function can be used to:

- Search for program modules where this variable is used
- Obtain the list of statements, rungs or expressions
- Display and check activation conditions

### Application converters

PL7 Micro/Junior/Pro software includes application converters which enable the reusing of all or part of previous applications written in:

- PL7 2, applications for TSX 17, TSX 27 or TSX 47 10/20/25 PLCs
- PL7 3 (2), applications for TSX/PMX 47...TSX/PMX 107 PLCs
- ORPHEE (2), applications for April Series 1000 PLCs

### X-Way communication drivers

Uni-Telway COM port and USB port (PC side) communication drivers are available on the PL7 software CD-ROM.

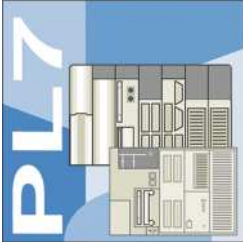
Depending on the user's needs, other drivers may be necessary. In this case, please consult our website [www.schneider-electric.com](http://www.schneider-electric.com) and download the drivers available.

(1) Using ≥ PL7 software V4.0 extends the system diagnostics of the Premium platform. The system bits and words can be monitored as well as automatic displaying of associated time-stamped messages, without any additional programming. This monitoring is of the system elements (processor, memory, tasks, etc.), "In rack" I/O and remote I/O on Fipio bus.  
(2) Function or feature requiring PL7 Junior/Pro software.

# Software

## PL7 software

### PL7 Micro/Junior/Pro



#### References

PL7 Micro/Junior/Pro are multi-language (English, French, German, Italian and Spanish) software packages designed for PC compatibles (1) with Windows 2000, XP, Vista or 7 (all 32-bit) operating system.

- For a station, the package comprises:
  - 1 CD-ROM containing the multilingual PL7 software, PL7 demonstration applications and the Uni-Telway terminal link driver
  - 2 CD-ROMs containing multilingual technical documentation
  - 1 CD-ROM containing Service Pack 5
- For 3-station packages, the quantities above are tripled.

**Note:** The operating systems of Modicon TSX Micro/Premium platforms are available on our website [www.schneider-electric.com](http://www.schneider-electric.com).

Cables for connection to the PC are to be ordered separately and depend on the desired number of users and the type of link (RS 232 or USB port). See separate parts (page 43100/5).

#### PL7 Micro software packages

PL7 Micro software enables programming in Instruction List, Ladder Diagram, Structured Text and Grafset languages.

It also enables the setting up of application-specific functions, maintenance and diagnostics of the developed applications. It includes the PL7 2 application converter.

Description	For PLCs	Licence type	Reference	Weight kg
PL7 Micro software packages	TSX Micro	Single (1 station)	TLX CD PL7M P45	–
		Group (3 stations)	TLX CD3 PL7M P45	–
PL7 Micro and SyCon V2.10 software packages	TSX Micro	Single (1 station)	TLX CD PL7M PC45	–
Software update for earlier version PL7 Micro software	TSX Micro	Single (1 station)	TLX RCD PL7M P45M	–
		Group (3 stations)	TLX RCD3 PL7M P45M	–
Software update for earlier version PL7 Micro software Supplied with SyCon V2.10	TSX Micro	Single (1 station)	TLX RCD PL7M PC45M	–

#### PL7 Junior software packages

PL7 Junior software enables programming in Instruction List, Ladder Diagram, Structured Text and Grafset languages.

It also enables the setting up of application-specific functions, maintenance and diagnostics of the developed applications. It includes PL7 2, PL7 3 and ORPHEE application converters.

Description	For PLCs	Licence type	Reference	Weight kg
PL7 Junior software packages	TSX Micro, Premium	Single (1 station)	TLX CD PL7J P45	–
		Group (3 stations)	TLX CD3 PL7J P45	–
Software update for earlier version PL7 Junior software	TSX Micro, Premium	Single (1 station)	TLX RCD PL7J P45M	–
		Group (3 stations)	TLX RCD3 PL7J P45M	–
Software upgrade packages from earlier version PL7 Micro	TSX Micro, Premium	Single (1 station)	TLX UCD PL7J P45M	–

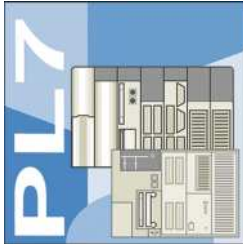
#### PL7 Pro software packages

PL7 Pro software has identical functions to that of PL7 Junior software. In addition, it allows the user to create their own DFB function blocks and graphic runtime screens.

Description	For PLCs	Licence type	Reference	Weight kg
PL7 Pro software packages	TSX Micro, Premium	Single (1 station)	TLX CD PL7P P45	–
		Group (3 stations)	TLX CD3 PL7P P45	–
Software update for earlier version PL7 Pro software	TSX Micro, Premium	Single (1 station)	TLX RCD PL7P P45M	–
		Group (3 stations)	TLX RCD3 PL7P P45M	–
Software upgrade packages from earlier version PL7 Junior	TSX Micro, Premium	Single (1 station)	TLX UCD PL7P P45M	–

(1) The configuration of the PC must correspond to the reference and version of the Windows operating system installed.  
 Note: The PC must have a CD-ROM drive.





References (continued)				
PL7 Micro/Pro software licences				
Description	For PLCs	Licence type	Reference	Weight kg
PL7 Micro Open Team software licence	TSX Micro	Team (10 stations) (1)	TLX OT PL7M P45M	–
PL7 Pro Open Team software licence	TSX Micro, Premium	Team (10 stations) (1)	TLX OT PL7P P45M	–
PL7 Pro Open Site software licence	TSX Micro, Premium	Site (>10 stations) (1)	TLX OS PL7P P45M	–



TSX PCX 1031

Separate parts			
Description	Description	Reference	Weight kg
X-Way drivers package for compatible PC	CD-ROM including X-Way drivers (see page 43100/3) Includes multilingual user documentation	TLX CD DRV20M	–



TSX CUSB 485

Description	Use	Processor port	To PC port	Length	Reference	Weight kg
Compatible PC connection cables	TSX Micro/Premium	Mini-DIN port	RS 232D (SUB-D 15-way connector)	2.5 m	TSX PCX 1031	0.170
			USB port (USB/RS 485 converter)	0.4 m	TSX CUSB 485 (2)	0.144
			USB port (mini-DIN/RJ45 cable)	2.5 m	TSX CRJMD 25 (2)	0.150

Description	Use	Reference	Weight kg
Universal Bluetooth® Interface (UBI)	<p>Provides Bluetooth® connectivity for products such as the Modicon M340/Premium platforms and Altivar/Lexium servo drives, via their serial port (RS 485). Used for setting up and maintenance of products. Designed for permanent installation and can be safely fitted on the inside or outside of electrical enclosures.</p> <ul style="list-style-type: none"> <li>■ Protocols supported: Modbus and Uni-Telway</li> <li>■ Powered via the product's RS 485 serial port</li> <li>■ Max. range in direct line of sight: 20 m</li> </ul> <p>The kit comprises:</p> <ul style="list-style-type: none"> <li>■ A Universal Bluetooth® interface (UBI)</li> <li>■ An RJ45/mini-DIN cable (length 1 m)</li> <li>■ An RJ45/RJ45 cable (length 1 m)</li> <li>■ A fixing clamp for installation inside the electrical enclosure</li> <li>■ A CD with configuration software and user manual</li> </ul>	TCS WAAC 13FB	0.320



TCS WAAC 13FB

(1) Team user workstations located on the same site.

(2) The TSX CUSB 485 converter requires the use of the TSX CRJMD 25 cordset (equipped with 2 connectors, 1 x mini-DIN and 1 x RJ45).

# Modicon Quantum automation platform

## Concept programming software

### Concept programming software

Concept is a software configuration and application programming tool for the Quantum and Momentum automation platforms. It is Windows-based software that can be run on a standard PC. The configuration task can be carried out online (with the PC connected to the Quantum CPU) or offline (PC only). Concept supports the configuration by recommending only permissible combinations. During online operation, the configured hardware is checked immediately for validity and illegal statements are rejected.

When the connection between the programming terminal (PC) and the Quantum CPU is established, the configured values are checked and compared with actual hardware resources. If a mismatch is detected, an error message is issued.

Concept editors support five IEC programming languages:

- Function Block Diagram (FBD) language
- Ladder (LD) language
- Sequential Function Chart (SFC) and Grafset language
- Instruction List (IL) language
- Structured Text (ST) language

as well as a Modicon Ladder language compatible with ProWORX/Modsoft (LL984). IEC 61131-3 compliant data types are also available. With the data type editor, custom data types can be converted to and from the IEC data types.

The basic elements of the FBD programming language are functions and function blocks that can be combined to create a logical unit. The same basic elements are used in the LD programming language; LD provides contact and coil elements. The Grafset SFC programming language uses basic step, transition, connection, branch, join and jump elements. The IL and ST text programming languages use instructions, expressions and key words. The LL984 programming language uses an instruction set and contact and coil elements.

You can write your control program in logical segments. A segment can be a functional unit, such as conveyor belt control. Only one programming language can be used within a given segment. You build the control program, which the CPU executes to control the process, by combining segments within one program. Within the program, IEC segments (written in FBD, LD, SFC, IL and ST) can be merged. The LL984 segments are always processed as a block by the IEC segments. Concept's sophisticated user interface uses windows and menus for easy navigation. Commands can be selected and executed quickly and easily using a mouse. Context-sensitive help is available at each editing step.

### Optional Concept SFC View software

When integrated in an HMI application, Concept SFC View can be used to monitor and control charts in applications developed in Sequential Function Chart (SFC) language running on Quantum PLCs.

# Modicon Quantum automation platform

## Concept programming software

Concept programming software			
Concept software packages			
Description	Licence type	Reference	Weight kg
Concept S Version 2.6	Single (1 station)	372 SPU 471 01 V26	–
Concept M Version 2.6	Single (1 station)	372 SPU 472 01 V26	–
Concept XL Version 2.6	Single (1 station)	372 SPU 474 01 V26	–
	Group (3 stations)	372 SPU 474 11 V26	–
	Team (10 stations)	372 SPU 474 21 V26	–
	Site (network)	372 SPU 474 31 V26	–
Concept EFB Toolkit Version 2.6	Single (1 station)	332 SPU 470 01 V26	–
HVAC Function Blocks Library	Site (network)	372 HVA 160 30V25	–
Concept maintenance and diagnostics packages			
Description	Licence type	Reference	Weight kg
Concept Application Loader Version 2.6	Single (1 station)	372 SPU 477 01 V26	–
Concept updates			
Description	Licence type	Reference	Weight kg
Concept XL Version ●.● to Concept XL V 2.6	Single (1 station)	372 ESS 474 01	–
	Group (3 stations)	372 ESS 474 03	–
	Team (10 stations)	372 ESS 474 10	–
	Site (network)	372 ESS 474 00	–
Concept S Version ●.● to Concept S V 2.6	Single (1 station)	372 ESS 471 01	–
Concept M Version ●.● to Concept M V 2.6	Single (1 station)	372 ESS 472 01	–
Modsoft version ●.● to Concept XL V 2.6	Depends on number of users	372 ESS 485 01	–
Concept EFB Toolkit version ●.● to Version 2.6	–	372 ESS 470 01	–
Optional Concept SFC View software			
Description	Licence type	Reference	Weight kg
Concept SFC View software packages (version V3.0)	Single (1 station)	372 SFV 16000 V30	–
	Team (10 stations)	372 SFV 16020 V30	–
	Site (100 stations)	372 SFV 16030 V30	–

# Human/Machine Interfaces

HMI configuration software

Catalog

August **2019**



Vijeo Designer



Intelligent Data Service



Vijeo Design'Air



Vijeo Design'Air Plus

# Quick access to product information

## Get technical information about your product

References

**Telefast Pre-wired System**  
Modicon ABE9 IP 67 passive splitter boxes

References					
Splitter boxes with connection by M2 connector					
Number of circuits	Connection by	LED indicator	Reference	Weight (kg)	
4	A-1012	Yes	ABE9C1012	0.270	
6	B-1012	Yes	ABE9C1012	0.320	
8	C-1012	Yes	ABE9C1012	0.370	
Splitter boxes with connection by Cable					
Number of circuits	Connection by	Length (mm)	Reference	Weight (kg)	
4	A-1012	5	ABE9C1012	0.280	
6	B-1012	5	ABE9C1012	0.330	
8	C-1012	5	ABE9C1012	0.380	

Each commercial reference presented in a catalog contains a hyperlink. Click on it to obtain the technical information of the product:

- Characteristics, Dimensions and drawings, Mounting and clearance, Connections and schemas, Performance curves
- Product image, Instruction sheet, User guide, Product certifications, End of life manual

**Schneider Electric**

XB5AL73415  
green flush/red projecting double-headed pushbutton Ø22 with marking

Download your XB5AL73415 datasheet

Change your selection

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Main

Range of product	Harmony XB5
Product or component type	Complete double-headed push-button
Device short name	XB5
Device material	Plastic
Fixing collar material	Plastic
Head type	Standard
Mounting diameter	22 mm
Shape of signaling unit head	Rectangular
Type of operator	Spring return
Operator profile	1 Push - 1 projecting push-buttons
Operator description	Green "I" - red "O"
Contacts type and composition	1 NO + 1 NC
Contact operation	Slow break

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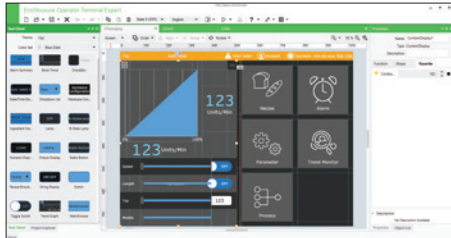
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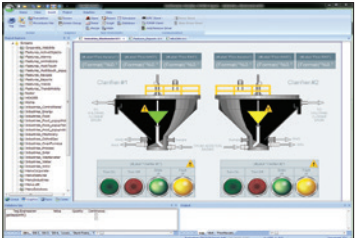

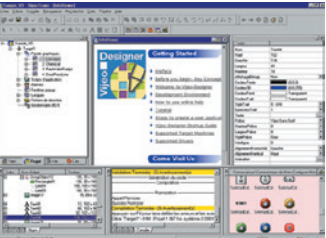


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Applications		Touchscreen Configuration software with UI design and gestures
		 
<b>Compatible products</b>	Type	Magelis™ STO Color Magelis ST6 Magelis GTO Advanced panels and Magelis GTU Universal panels Magelis iPCs Windows compatible computers
	Maximum number of targets	1
	Operating system on terminals	Proprietary for Magelis STO Color, Magelis ST6 and Magelis GTO/GTU Windows Embedded Standard 7 for Magelis iPCs
<b>Functions</b>	Reading/writing of PLC variables	Yes
	Display of variables	Yes
	Data processing	Yes
	Sharing of variables between HMI applications	–
	Saving of variables to external database	–
<b>Internationalization</b>		16 languages supported by 26 type of fonts
<b>Development of graphic applications</b>	Native library of graphic objects	Yes
	Curves and alarms	Yes
	Scripts	Block Script
<b>Communication between HMI application and PLCs</b>		Via I/O drivers: Schneider Electric or third-party protocols (Mitsubishi, Omron, Rockwell Automation, Siemens)
<b>Uploading of applications</b>		–
<b>Simulation of HMI applications</b>		Yes
<b>Recipe management</b>		Yes, up to 256 recipes, 600,000 ingredients in total
<b>Report and barcode printing</b>		–
<b>Screen capture</b>		Yes, for Magelis GTU Open Box and Magelis iPCs. in PNG format
<b>Access security</b>		Password protected
<b>Interface languages</b>		Online Help in 4 languages (English, French, German, Italian), interface in 10 languages (English, French, German, Italian, Portuguese, Spanish, Japanese, Traditional Chinese, Simplified Chinese, Korean)
<b>OS compatibility</b>		Windows 7, Windows 8, Windows 8.1, Windows 10 (32-bit/64-bit)
<b>Software type</b>		<b>EcoStruxure™ Operator Terminal Expert</b>
<b>Pages</b>		For more information, please refer to <a href="#">DIA5ED2140703EN</a> catalog.

(1) Depending on the compatible product.

Configuration software for data-intensive and complex visualization	Classic Configuration software for the complete HMI range
 	 
Magelis G5U2, Magelis iPCs	Magelis STO/STU/GTO Basic Panels Magelis XBTGH/GK/GTU (1) Advanced Panels Magelis iPCs
1	32
Magelis G5U: Windows Embedded 7 Standard Magelis iPCs: Windows Embedded 7 Standard, Windows 7 SP1, Windows 8.1, Windows 10 IoT Enterprise	Proprietary for Magelis STO/STU/GTO, Magelis XBTGH/GK/GTU
Machine Control: 1,500 tags Line Management: 4,000 tags Line Management Plus: 32,000 tags Supervision: 64,000 tags	Yes, up to 8,000 internal and external variables
Yes, depending on the number of Tags	Yes
Yes, with VBScript or Built-in Scripting	Yes, using expression editor or Java programming
Yes, via TCP/IP, OPC, Driver or Database	Up to 300 variables between 8 terminals, without router PLC Proprietary protocol above TCP/IP
Yes, with relational database (any SQL Database, MS Access and Excel CSV file)	Yes, with the Intelligent Data Service extension
Multi-language (depending on the OS)	Up to 15 languages supported by 34 Western alphabets, 4 Asian alphabets and 2 Middle Eastern alphabets embedded in the application
Yes, user customizable	Yes
Yes	Yes, with log
VBScript and Built-In scripting	Java
Via I/O drivers: Schneider Electric or third-party protocols (Over 250 Drivers: Mitsubishi, Omron, Rockwell Automation, Siemens)	
Yes	–
Yes	
Yes, built-in tools with local file or with SQL DB	Yes, up to 32 groups, 1,024 ingredients for 256 recipes per group, proprietary or CSV format, complete multilingual support for labels and ingredients
Report is a built-in function that executes the specified Report worksheet and sends the output to hard disk, printer, or PDF.	On the fly alarms, log data. Up to 9,999 active alarms, records, or logs Main USB Barcode supported for Magelis with Windows OS and Main Serial Barcode supported for other Magelis.
Yes	Yes, Magelis GTO/GTU, and Magelis industrial Panel PCs and Box PCs (HMIBMP, HMIBMU) in JPEG format
Linked to user profiles	
Screens, online help, and documentation in electronic format available in 5 languages: English, German, French, Chinese, Japanese	Screens, online help, and documentation in electronic format available in 7 languages: English, French, German, Italian, Portuguese, Simplified Chinese, and Spanish
Windows 7, Windows 8.1, Windows 10 (64-bit), WES7 (64-bit)	Windows 10 Professional, Windows 7 Business (32-bit/64-bit)
<b>EcoStruxure™ Machine SCADA Expert</b>	<b>Vijeo Designer™</b>
For more information, please refer to <a href="#">DIA5ED2171201EN</a> catalog.	9



Vijeo Designer software

### Presentation

The cross-platform Vijeo Designer™ configuration software can be used to create operator dialogue applications for controlling automation systems for:

- Magelis™ STO and STU terminals (Vijeo Designer Limited Edition is sufficient)
- Magelis GTO terminals
- Magelis GTU terminals
- Magelis GK terminals
- Magelis XBTGH portable terminals
- Magelis iPCs (Panel PCs and Box PCs)

Vijeo Designer and a suitable terminal can be combined to provide a solution for each and every control station requirement, at the cost of a simple software reconfiguration.

Capable of supporting video image streaming, the Magelis Vijeo Designer offer provides access to new types of application. Users can view their process instantly or subject to a delay, on the same screen as the HMI dialogue.

Vijeo Designer uses Magelis Ethernet TCP/IP connectivity and is, therefore, able to support WEB Gate remote access, the sharing of application data between terminals, the transfer of recipes and logs for variables, and much more.

Applications can take on an international nature, because Vijeo Designer supports up to 15 languages simultaneously in one project (40 alphabets are available on the Magelis GTU/GTO/GK terminals). The interface and documentation for Vijeo Designer are available in 7 languages: English, French, German, Italian, Brazilian Portuguese, Simplified Chinese and Spanish.

Vijeo Designer is the HMI component of SoMachine and EcoStruxure™ Machine Expert. Vijeo Designer will run on any PC with Windows 10 Professional or Windows 7. It supports WYSIWYG simulation (1) of the developed application (without the target Magelis GTO/GK/GTU terminal or Magelis iPC), simulation of the PLC variables (I/O, internal bits and words) and ensures that the application runs in total security on the Magelis GTO/GK/GTU terminals or Magelis iPCs.



Example project

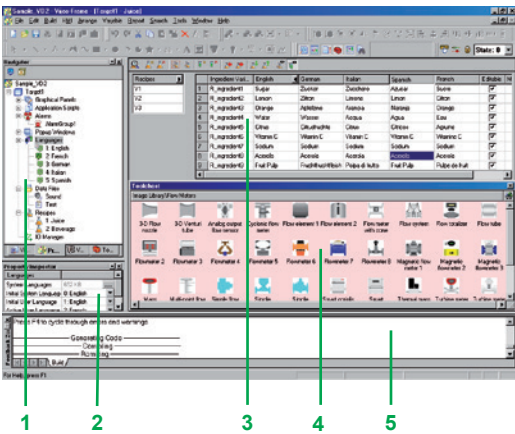
### Configuration

Vijeo Designer configuration software enables operator dialogue projects to be processed quickly and easily thanks to its advanced ergonomics using up to 5 configurable windows:

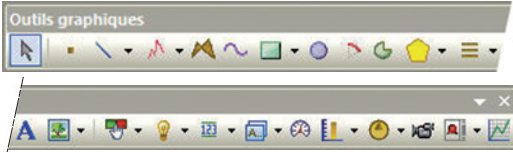
- 1 Browser window
- 2 Object List window
- 3 Recipes window
- 4 Library of Animated Graphic Objects and Image Objects window
- 5 Report window

The software also offers a complete set of application management tools for:

- Project creation, whereby a project comprises one or a number of applications for Magelis GTO/GK/GTU, Panel PCs and Box PCs with sharing of variables between terminals (up to 8 terminals and 300 variables)
- Recipe management (32 groups of 256 recipes with up to 1024 ingredients)
- Cross-referencing of application variables
- Documentation of views for an application
- A full simulation mode for testing the application from the design office
- Bar code reader management via:
  - USB port on Magelis iPCs and Magelis GTU (with Box HMIG5U2)
  - COM1 or COM2 serial port on Magelis GK/GTO/GTU
- USB keyboard and mouse support for all terminals incorporating a USB port (only one peripheral can be connected at any one time)
- Retrieval of symbol files for PLC variables generated by PL7, Concept, ProWORX 32 and Unity Pro software (2)
- Report printing
- Barcode printing



(1) What You See Is What You Get (on the screen of the target terminal).  
 (2) DDT structured types and "unlocated" variables are supported.

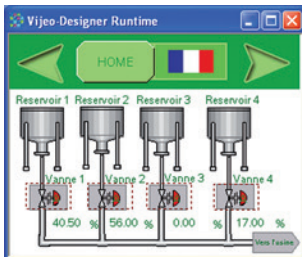


Graphic toolbar

### Graphics editor

The graphics editor in Vijeo Designer offers interface consistency for simple objects as well as for more sophisticated ones. It enables application developers to create views easily based on:

- Simple objects to be configured:
  - points, lines, rectangles, ellipses, arcs
  - bar graphs, meters, tanks, fillers, pie charts, curves
  - polylines, polygons, regular polygons, Bézier curves, scales
  - texts, images or alarm summary, etc.
- Preconfigured advanced objects: switches, radio buttons, indicators, buttons, tanks, bar graphs, potentiometers, selector switches, text or number fields, enumerated lists, etc.
- Screen masks and skeletons for type applications



Object animation example

### Object animations

8 types of graphic-object animation support the rapid creation of animated mimics on the basis of:

- Pressing the touch panel
- Change of color
- Filling
- Movement
- Rotation
- Size
- Visibility
- Display of associated value



Library of animated graphic objects

### Library of animated graphic objects

The library of animated graphic objects makes the creation of mimics very efficient thanks to the numerous “ready-made” animation objects. It includes more than 4000 2-D and 3-D “industrial” vector images. Simply “drag and drop” the object using the mouse to position it on the mimic being created.

User-defined objects can be added to this library using the same simple “drag and drop” method.

### Java scripts

Vijeo Designer supports data processing using Java language scripts. This function facilitates the running of complex animations, the automation of tasks within the terminal and the management of calculations in order to relieve the load on the PLC programs.

The scripts (50 lines, max.) can be associated with:

- Variables
- Operator actions
- Screens
- The application itself

```

//Script Created: 10 09, 2001
//
// Description:
//
// Replace this line with your script
int pos;

if (movebottles.getTintValue() != 0) // If conveyor is OFF, do not move bottles
{
    pos = BottlePos.getTintValue();
    if (pos >= 1000)
        pos = 0; // If bottle position has been the out of display area, reset position.
    pos = pos + 10 + 2 * ConveyorSpeed.getTintValue();
    BottlePos.write(pos);
}
    
```

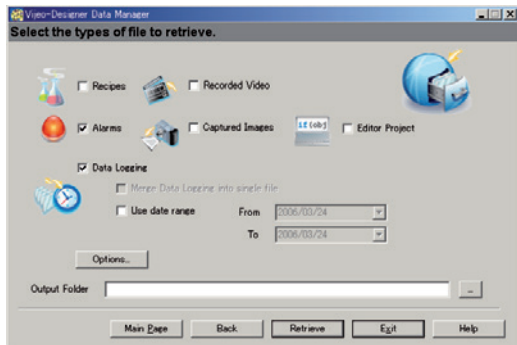
Java script example

### User-customizable resources

To enable applications to be customized in accordance with customer requirements, Vijeo Designer features a new resource concept that makes it possible to define styles (colours, images, character fonts, text lists).

To quickly customize a generic application to meet customer requirements, simply assign these styles to the objects concerned.

The resource concept is supported by the following native objects: *Meter*, *Bar Graph*, *Slider*, *Potentiometer*, *Selector*, *Text List* and *Image List*.

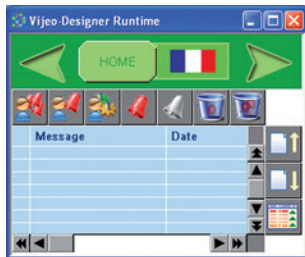


Data Manager: Transfer recipes, videos, images, etc. via Ethernet or USB, by simply clicking the mouse

### Advanced functions

Based on new information technologies, Vijeo Designer features a large number of advanced functions for processing a higher volume of data, both faster and more reliably:

- Multimedia data management in the most popular formats:
  - image display (jpeg, bmp, emf and png files)
  - text display and processing (txt files)
  - sound message processing (wav files)
- Alarm or curve logs recorded
- Zoom in/out function on trending curves for a detailed analysis
- Alarm management. All variables can be categorized as "Alarms" and can be customized in respect of visualization and acknowledgment. These Boolean and analogue threshold type alarms can be printed on the fly.
- Multimode application transfer: via serial link, USB, Ethernet and Compact Flash memory card (on multifunction terminals)
- Backup of application source files on the terminal or iPC to facilitate maintenance
- User-friendly data exchange between PC and terminal using the Data Manager tool
- Integrated FTP server for downloading/uploading recipes via Ethernet TCP/IP and restoring logs to Magelis GTO/GK/GTU and Magelis iPC
- Multiport communication for multifunction terminals, 2 serial links and 1 Ethernet network can be active simultaneously
- Action table for associating a particular behavior with an event
- Use of a USB memory stick (up to 4 GB) for application downloads/uploads, data retrieval or recipe exchange
- E-mail on action and event (the e-mail text can contain up to 1000 characters)



Alarm management

### WEB Gate remote connection

Vijeo Designer supports a WEB Gate remote connection with any platform which has an Ethernet connection point.

WEB Gate supports remote visualization of Vijeo Designer applications with Internet Explorer on most of the PC running Windows OS (1). The size of the page displayed is determined by the terminal.

WEB Gate supports the display of pages similar to those in the Vijeo Designer application, or of different pages, i.e. startup pages and navigation pages can be differentiated in order to indicate the type of access (terminal/WEB Gate).

Several connections are possible at the same time, with the number depending on the size of the application.

The high security mode of WEB Gate excludes any risk of applications jamming as a result of variables being modified via the terminal and WEB Gate at the same time.

For increased confidentiality:

- WEB Gate access can be restricted to only those PCs whose IP address appears in the licensing list.
- Some Vijeo Designer functions are not supported by WEB Gate:
  - application shutdown, restart
  - terminal configuration
  - reading of an acoustic animation (sound file)
  - display a recorded video sequence

### WEB Maintenance remote diagnostics

In addition to WEB Gate, Vijeo Designer features the embedded diagnostics service WEB Maintenance - Transparent Ready WEB Server Class B15 (1). This server's navigation bar features an option for accessing the following functions:

- WEB Gate
- Animation tables
- Web interface for retrieving data files (recipes, logs, multimedia files)

**Note:** Terminals programmed using Vijeo Designer can be accessed directly via their names. This function is supported by the DHCP and DNS network services.



Report printing

(1) Please refer to our website [www.schneider-electric.com](http://www.schneider-electric.com).



### Integrated diagnostics

Vijeo Designer can be used to access the “Diag buffer” function of Modicon M340/ Premium/Quantum PLCs via the following protocols:

	Modicon M340 Unity Pro	Premium PL7	Premium Unity Pro	Quantum Unity Pro
UNITE-Series	Accessible	Accessible	Accessible	Accessible
UNITE-TCP/IP XWAY	Accessible	Accessible	Accessible	Accessible
UMAS Modbus TCP	Accessible	Accessible	Accessible	Accessible
UMAS Modbus RTU	Accessible	Not accessible	Not accessible	Not accessible
UMAS Modbus Plus	Accessible	Not accessible	Not accessible	Not accessible
UMAS UNITE-Series	Accessible	Accessible	Accessible	Accessible
UMAS UNITE-TCP/IP XWAY	Accessible	Accessible	Accessible	Accessible
UMAS Modbus TCP USB PPP	Accessible	Not accessible	Not accessible	Not accessible

Accessible  
 Not accessible

### Intelligent Data Service option

Intelligent Data Service (IDS) is an extension of Vijeo Designer for the target PC (Magelis or standard PC) which supports the implementation of control solutions for one or a number of terminals (up to 8).

This extension offers full process traceability. Both process variables and operator actions are tracked so that the right decisions can be made at the right time (*Industrial Business Intelligence*).

#### Powerful

The IDS extension enables data to be collected from multiple terminals via Ethernet without impairing HMI reaction times.

#### Flexible

The IDS extension supports various storage methods; CSV files can be read directly in MS Excel, saving as free format in an SQL database or secure IDV (*Intelligent Data Vault*) files to ensure compatibility with the requirements of 21 CFR Part 11.

#### Innovative

In just a few clicks of the mouse, the IDS extension allows you to create dashboards that can be accessed from any WEB browser (Silverlight) as well as clear and well organized reporting documents.

### Intelligent Data Service Report Printing option

Intelligent Data Service (IDS) Report Printing is an extension of Intelligent Data Service for the PC (Magelis or Standard PC).

This extension allows you to create new reports “from scratch” and link them to IDS data.

In addition to editing functions, IDS Report Printing allows you to preview the report before printing, print it or save it to file on disk.



### Communication protocols between the HMI application and the PLCs

Communication between the operator dialogue application and the connected control equipment is established using a communication protocol (driver), which is selected when creating the application in Vijeo Designer.

#### Schneider Electric protocols

Vijeo Designer supports the following Schneider Electric protocols:

- Modbus RTU Master
- Modbus TCP/IP Master
- Modbus Plus (1)
- Modbus 32-bit extensions
- ELAU PacDrive (ELAU C00x/LMCx00)
- Unitelway
- UniTE TCP/IP
- USB terminal port for Modicon M340 CPUs
- FIPIO (2), FIPWAY (2)

All Schneider Electric drivers provide IEC access to input bits/words and output bits/words: Modbus (RTU and TCP/IP), Modbus Plus (GMU and USB), Uni-Telway, Xway.

Direct I/O access authorizes access to the hardware input and output registers.

Register addresses comply with the syntax of IEC standards and the address rules for UNITY configuration software (%I, %IW, %Q, %QW).

If requested by the user, the variables associated with a PLC can be read ("on demand scan" function). The DDT and unlocated variables of Unity Pro are supported.

#### Third-party protocols

Vijeo Designer supports the following third-party protocols:

#### Emerson

ROC Plus (SIO) and ROC Plus TCP/IP protocols.

#### Mitsubishi

Melsec protocols: A/Q CPU (SIO), A/Q Ethernet (TCP), QnU Ethernet (TCP), A/Q Link (SIO), QnA CPU (SIO), Q Ethernet (UDP), QnU Ethernet (UDP), FX (CPU), QUTE for Q00JCPU.

Except for Melsec-A Link (SIO) protocol, Mitsubishi serial link protocols do not work on the RJ45 port (1).

#### Omron

Sysmac protocols: FINS (SIO), LINK (SIO), FINS (Ethernet) and Trajexia.

#### Rockwell Automation

Allen-Bradley protocols: DF1-Full Duplex, RS DataHighway 485, Ethernet IP (3) (PLC5, SLC500, MicroLogix, ControlLogix), Ethernet IP native (ControlLogix), Ethernet IP High Speed access, DeviceNet Slave (5), Ethernet IP Explicit.

#### Siemens

Simatic protocols: MPI (S7-300/400), MPI Direct, RK512/3964R (S7-300/400), PPI, Siemens Ethernet (ISO-on-TCP/Profinet), MPI pass-through function.

Profibus DP protocol (4).

#### Toyoda

Toyopuc Ethernet PC3J (TCP/IP) and Toyopuc Link (SIO) protocols.

(1) Via USB Modbus Plus gateways: **XBTZGUMP** with proprietary OS, **TSXCUSBMBP** for Magelis with Windows OS.

(2) Via USB FIPIO gateway **TSXCUSBFIP**.

(3) Certified ODVA compatibility.

(4) Via Profibus DP Bus expansion card **XBTZGPDP**. Certified by Profibus Foundation.

(5) Via Device Net Bus expansion card **XBTZGDVN**.

**Note:** For more information on connection of Magelis terminals to field buses, please refer to "Magelis GTO/GK/GH/GTU" catalog.





### References

All licences for the Vijeo Designer configuration software listed below consist of a DVD containing:

- Vijeo Designer software, including:
  - Copyright-free stand-alone installation of Data Manager
- User documentation in electronic format, including:
  - Online help for the software
  - User Manual for the supported targets
  - Setup Manual for the different protocols supported
- A multimedia self-learning tool lasting 1 hour 30 minutes in English/French
- The supported communication protocols

**Note:** Magelis STO/STU terminals can be programmed using Vijeo Designer Limited Edition. Vijeo Designer V6.2 supports applications created with any version of Vijeo Designer ≥ V4.6.  
If you are updating an earlier application, please consult your Schneider Electric Customer Care Centre.

### Single-station Build Time licences

Description	Licence type	Application transfer cable		Reference	Weight kg
		PC side port	Magelis terminal side		
Vijeo Designer configuration software	Single (1 station)	–	– (1)	<a href="#">VJDSNDTGSV62M</a>	0.125
		USB	Magelis STO/STU Magelis GTO/GK/GH/GTU Magelis industrial Panel PCs and Box PCs (HMIBMP, HMIBMU) (2)	<a href="#">VJDSUDTGAV62M</a>	0.330

### Multi-station Build Time licences

Description	Licence type	Number of stations	Reference	Weight
Vijeo Designer configuration software	Group	3	<a href="#">VJDGNDTGSV62M</a>	0.125
	Team	10	<a href="#">VJDTNDTGSV62M</a>	0.125
	Facility	Unlimited number of stations on one site	<a href="#">VJDFNDTGSV62M</a>	0.125

### Run Time licences (3)

Description	Licence type	Number of stations	Reference	Weight
Vijeo Designer Run Time licence for Magelis iPC	Single	1	<a href="#">VJDSNRTMPC</a>	–
Intelligent Data Service licence extension for Vijeo Designer Run Time	Single	1	<a href="#">VJDSNTRCKV62M</a>	–
Intelligent Data Service Report Printing for IDS	Single	1	<a href="#">VJDSNTRPRV62M</a>	–
Vijeo Designer Run Time IDS Report Print pack (4)	Single	1	<a href="#">VJDSNTRPKV62M</a>	–

(1) References for application transfer cables (PC to Magelis GTO/GK/GH/GTU terminal) are listed under "Application transfer cables - terminal to PC" in "Magelis GTO/GK/GH/GTU" catalog.  
 (2) USB cable for PC connection included, **XBTZG935** (refer to "Magelis GTO/GK/GH/GTU" catalog).  
 (3) The Run Time licence drives the execution of an application. It is only used for Magelis industrial Panel PCs and Box PCs (HMIBMP, HMIBMU).  
 (4) Pack of 3 licences: Vijeo Designer Run Time licence for Magelis iPC, Intelligent Data Service licence extension and Intelligent Data Service Report Printing licence extension.

# HMI configuration software

## Applications for tablets and smartphones

### Vijeo Design'Air



Vijeo Design'Air

#### Presentation

Vijeo Design'Air is an application for Android and iOS tablets and smartphones. They enable you to connect remotely to an HMI terminal over a WiFi network and display a graphical view of the same on your tablet and smartphone.

During the design phase, you can set the HMI terminal to be detected by Vijeo Design'Air. The HMI's accessibility level can be configured to provide view only mode or full control and also secured by requiring user authentication for login.

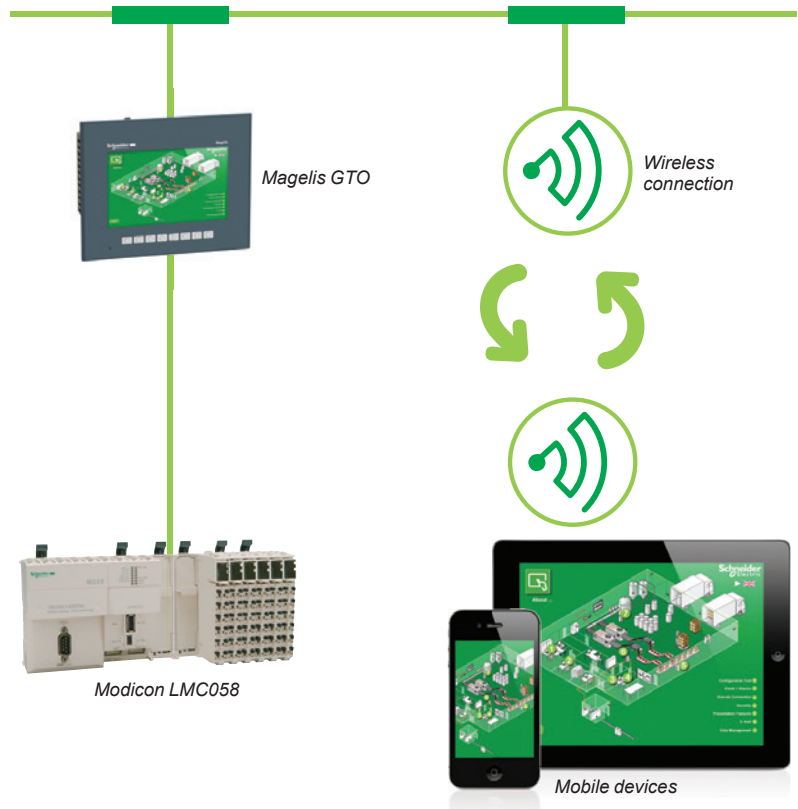
Vijeo Design'Air supports the following features:

- HMI Auto-detect: scans and detects available HMI terminals on a nearby network.
- Remote monitoring: connects tablets and smartphones to HMI terminals, and allows remote viewing and controlling of HMI projects at run time.
- Advanced screen: takes advantage of advanced graphic and multi-touch capabilities of tablets and smartphones and applies it to the automation industry.

#### Architecture

In this configuration, the HMI terminal acts as the server, while the tablet or smartphone acts as the client. The server and client communicate over a WiFi wireless, 3G, 4G, or LTE network.

After connection is established, you can use some of the functionalities of tablets and smartphones to remotely interact with the HMI terminal. For example, you can perform touch or swipe actions to start or stop a process or to navigate between screens. You can also use pinch action to zoom in and out of a screen for better viewing.



#### Vijeo Design'Air compatible HMI terminals

Below is the list of Magelis HMIs that are compatible with Vijeo Design'Air:

- Magelis™ STO and STU terminals
- Magelis GTO and GTU terminals
- Magelis GK terminals
- Magelis XBTGH portable terminals
- Magelis SCU
- Magelis Industrial Panel PCs and Box PCs (HMIBMP, HMIBMU)

**Note:** Download Vijeo Design'Air from Google Play or App Store in iTunes.



Vijeo Design'Air Plus

#### Presentation

Vijeo Design'Air Plus is an application for Android and iOS tablets and smartphones which enables you to create a tablet/smartphone project specifically for the tablet/smartphone display size. At runtime, an operator can access the user application to display data and control automation processes on the tablet/smartphone.

The Vijeo Designer's drawing tools can be used to create and edit a visual representation of the automation process. You can draw shapes and parts (such as rectangles, arcs, and pies), Toolchest parts (such as numeric displays, switches, and bar graphs), use the gradient feature to enhance the color of the drawn objects, and set up an Alarm Panel for remote alarm monitoring.

Vijeo Design'Air Plus supports the following features:

- HMI project design: enables the HMI designer to create a tablet/smartphone project of the automation process using enhanced drawing tools.
- Remote access and control: enables an operator to control automation processes, provide the ability to view and monitor data, change variable values, and monitor and acknowledge alarms.
- Enhanced data display: takes advantage of the advanced graphic and multi-touch capabilities of tablets and smartphones and applies them to automation industry.

#### Architecture

Vijeo Design'Air Plus allows the operators to select a user application, and on successful login downloads and launches the tablet/smartphone application. The operator can view and monitor an automation process, and for example, change values in numeric displays and string displays. In the Alarm Panel, the operator can monitor and acknowledge alarms.



#### Vijeo Design'Air Plus compatible HMI terminals

Below is the list of Magelis HMIs that are compatible with Vijeo Design'Air Plus:

- Magelis STO and STU terminals
- Magelis GTO and GTU terminals
- Magelis GK terminals
- Magelis XBTGH portable terminals
- Magelis Industrial Panel PCs and Box PCs (HMIBMP, HMIBMU)

**Note:** Download Vijeo Design'Air Plus from Google Play or App Store in iTunes.

<b>V</b>	
VJDFNDTGSV62M	9
VJGNDTGSV62M	9
VJDSNDTGSV62M	9
VJDSNRTMPC	9
VJDSNTRCKV62M	9
VJDSNTRPKV62M	9
VJDSNTRPRV62M	9
VJDSUDTGAV62M	9
VJDTNDTGSV62M	9



[www.schneider-electric.com/hmi](http://www.schneider-electric.com/hmi)

#### Schneider Electric Industries SAS

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35, rue Joseph Monier  
F-92500 Rueil-Malmaison  
France

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Design: Schneider Electric  
Photos: Schneider Electric

# Human/Machine Interfaces

EcoStruxure™ Operator Terminal Expert

Catalog

March 2019



# Quick access to Product information

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- Download Digi-Cat from this address:

<http://digi-cat.schneider-electric.com/download.html>



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- Find the right training for your needs
- Locate the training center with the selector tool, using this address:

<http://www.schneider-electric.com/b2b/en/services/training/technical-training.jsp>



then click on

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# General contents

## EcoStruxure™ Operator Terminal Expert

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### ■ Presentation

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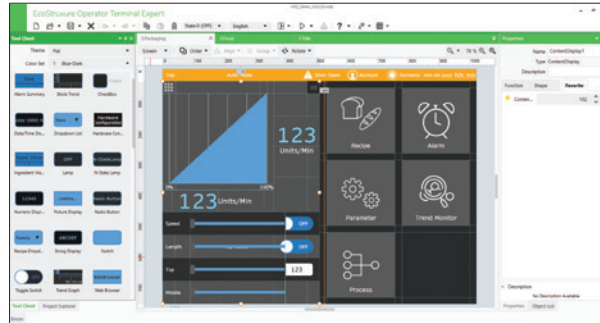
■ Product reference index ..... page 12

### EcoStruxure™ Operator Terminal Expert



EcoStruxure Operator Terminal Expert allows you to create and edit application screens that control automation systems for Magelis™ GTU (Standard, Premium and Open Boxes)/STO color/GTO/ST6 terminals, and Magelis industrial PCs (Panel and Box).

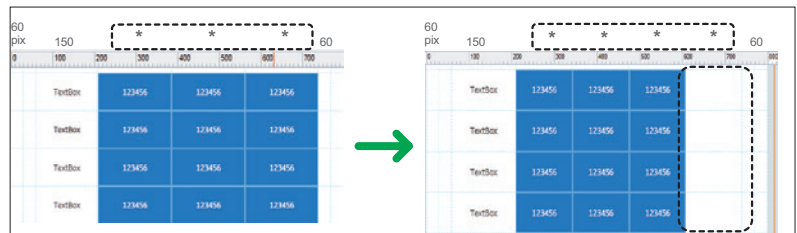
EcoStruxure Operator Terminal Expert features a modern and simple-to-use user interface, easy-to-access functions and information, and a multi-platform working environment. It also shortens design time by providing pre-made navigation framework.



EcoStruxure Operator Terminal Expert with vector graphics

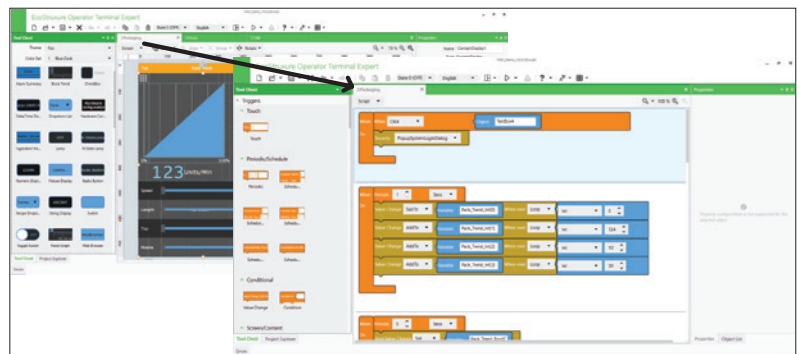
#### Faster design

- > Responsive grid design allows easy adaptation of the application irrespective of different screen resolutions



Automatic grid adjustment

- > Scripting made easy for everyone using a graphical drag and drop editor

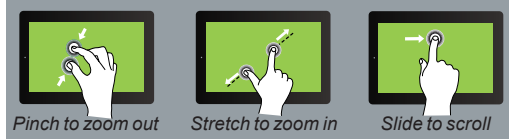


Block scripting

EcoStruxure Operator Terminal Expert → Maximizes efficiency with modern functionalities and user-friendly features

### Intuitive operation

- > Multi-touch zoom in/zoom out, slide, pinch, and stretch options similar to smartphones for enhanced user experience



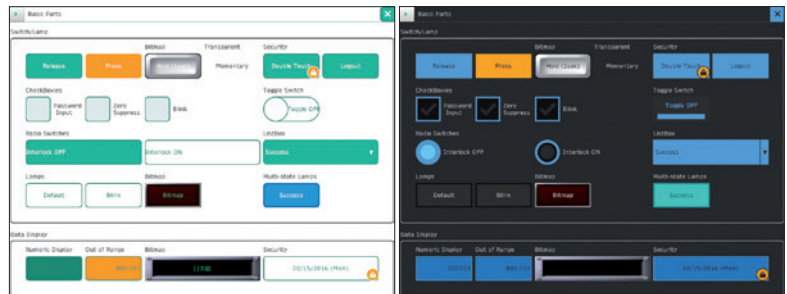
Touch screen gestures

- > Multiple screens displaying various information can be viewed in a single screen


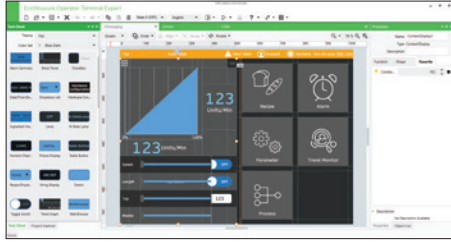


Multi-Screen view


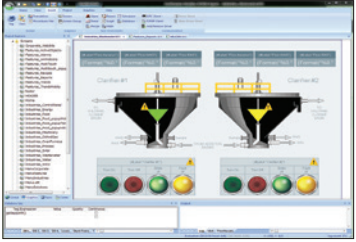

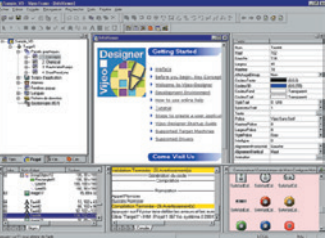
- > High quality graphics and quick adaptation of themes



Themes

Applications		Touchscreen Configuration software with UI design and gestures
		 
<b>Compatible products</b>	Type	Magelis™ STO Color Magelis ST6 Magelis GTO Advanced panels and Magelis GTU Universal panels Magelis Industrial PCs Windows compatible computers
	Maximum number of targets	1
	Operating system on terminals	Proprietary for Magelis STO Color, Magelis ST6 and Magelis GTO/GTU Windows Embedded Standard 7 for Magelis Industrial PCs
<b>Functions</b>	Reading/writing of PLC variables	Yes
	Display of variables	Yes
	Data processing	Yes
	Sharing of variables between HMI applications	–
	Saving of variables to external database	–
<b>Internationalization</b>		16 languages supported by 26 type of fonts
<b>Development of graphic applications</b>	Native library of graphic objects	Yes
	Curves and alarms	Yes
	Scripts	Block Script
<b>Communication between HMI application and PLCs</b>		Via I/O drivers: Schneider Electric or third-party protocols (Mitsubishi, Omron, Rockwell Automation, Siemens)
<b>Uploading of applications</b>		–
<b>Simulation of HMI applications</b>		Yes
<b>Recipe management</b>		Yes, up to 256 recipes, 600,000 ingredients in total
<b>Report and barcode printing</b>		–
<b>Screen capture</b>		Yes, for Magelis GTU Open Box and Magelis Industrial PCs. in PNG format
<b>Access security</b>		Password protected
<b>Interface languages</b>		Online Help in 4 languages (English, French, German, Italian), interface in 10 languages (English, French, German, Italian, Portuguese, Spanish, Japanese, Traditional Chinese, Simplified Chinese, Korean)
<b>OS compatibility</b>		Windows 7, Windows 8, Windows 8.1, Windows 10 (32-bit/64-bit)
<b>Software type</b>		<b>EcoStruxure™ Operator Terminal Expert</b>
<b>Pages</b>		11

(1) All Magelis XBT and Magelis GTO/GTU terminals behave transparently on restoration of power.  
(2) Depending on compatible product.

Configuration software for data-intensive and complex visualization	Classic Configuration software for the complete HMI range
 	 
Magelis G5U2, Magelis Industrial PCs	Magelis™ STO/STU Small panels Magelis XBTGT/GK/GH/GTO Advanced panels and Magelis GTU Universal panels (1) Magelis Industrial PCs
1	32
Magelis G5U: Windows Embedded 7 Standard Magelis Industrial PCs: Windows Embedded 7 Standard, Windows 7 SP1, Windows 8.1, Windows 10 IoT Enterprise	Proprietary for Magelis™ STO/STU, Magelis™ XBTGT/GK/GH and Magelis™ GTO/GTU Windows XP embedded for Magelis™ GTW
Machine Control: 1,500 tags Line Management: 4,000 tags Line Management Plus: 32,000 tags Supervision: 64,000 tags	Yes, up to 8,000 internal and external variables
Yes, depending on the number of Tags	Yes
Yes, with VBScript or Built-in Scripting	Yes, using expression editor or Java programming
Yes, via TCP/IP, OPC, Driver or Database	Up to 300 variables between 8 terminals, without router PLC Proprietary protocol above TCP/IP
Yes, with relational database (any SQL Database, MS Access and Excel CSV file)	Yes, with the Intelligent Data Service extension
Multi-language (depending on the OS)	Up to 15 languages supported by 34 Western alphabets, 4 Asian alphabets and 2 Middle Eastern alphabets embedded in the application
Yes, user customizable	Yes
Yes	Yes, with log
VBScript and Built-In scripting	Java
Via I/O drivers: Schneider Electric or third-party protocols (Over 250 Drivers: Mitsubishi, Omron, Rockwell Automation, Siemens)	
Yes	–
Yes	
Yes, built-in tools with local file or with SQL DB	Yes, up to 32 groups, 1,024 ingredients for 256 recipes per group, proprietary or CSV format, complete multilingual support for labels and ingredients
Report is a built-in function that executes the specified Report worksheet and sends the output to hard disk, printer, or PDF.	On the fly alarms, log data. Up to 9,999 active alarms, records, or logs Main barcode types supported: UPC-A, UPC-E, JAN/EAN8, JAN/EAN13, ITF, CODE39, CODE93, CODE128, CODABAR (NW-7)
Yes	Yes, for Magelis™ XBTGT (XBTGT1105 and higher), Magelis GTO/GTU, and Magelis Industrial PCs in JPEG format
Linked to user profiles	
Screens, online help, and documentation in electronic format available in 5 languages: English, German, French, Chinese, Japanese	Screens, online help, and documentation in electronic format available in 7 languages: English, French, German, Italian, Portuguese, Simplified Chinese, and Spanish
Windows 7, Windows 8.1, Windows 10 (64-bit), WES7 (64-bit)	Windows XP Professional, Windows 7 Business (32-bit/64-bit)
<b>EcoStruxure™ Machine SCADA Expert</b>	<b>Vijeo Designer™</b>
For more information, please refer to the EcoStruxure Machine SCADA Expert catalog on our website <a href="http://www.schneider-electric.com">www.schneider-electric.com</a> .	For more information, please refer to the Vijeo Designer HMI configuration software catalog on our website <a href="http://www.schneider-electric.com">www.schneider-electric.com</a> .

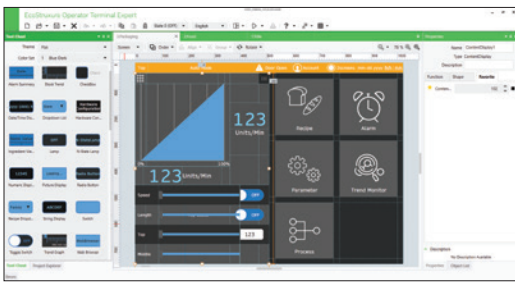


### Presentation

The cross-platform EcoStruxure™ Operator Terminal Expert can be used to create HMI applications that control automation systems for:

- Magelis GTU (Standard, Premium and Open Boxes)
- Magelis GTO
- Magelis STO (Color)
- Magelis ST6
- Magelis industrial PCs (Panel and Box PCs)
- Windows compatible computers

EcoStruxure Operator Terminal Expert supports English, French, German, Italian, Portuguese, Spanish, Japanese, Traditional Chinese, Simplified Chinese, and Korean languages and provides access to new application types.

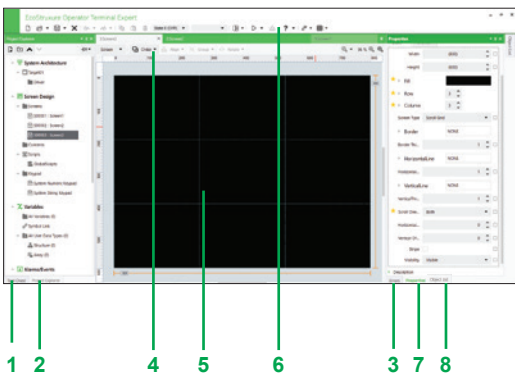


EcoStruxure Operator Terminal Expert with vector graphics

EcoStruxure Operator Terminal Expert runs on any PC with Windows 7, Windows 8, Windows 8.1, or Windows 10 operating system. This supports WYSIWYG (1) of the developed application and the PLC variables (I/O, internal bits and words), and also helps ensure that the application runs securely on Magelis GTU/STO color/GTO terminals or Magelis industrial PCs.

EcoStruxure Operator Terminal Expert supports features for creating and organizing HMI applications:

- Intuitive and simple-to-develop user interface
- Gesture experience by multi-touch, zoom in/zoom out, slide, and stretch
- Templates and theme design selection
- Graphic configuration by Universe “System Architecture” view
- Windows 7 (32/64-bit), Windows 8/8.1 (32/64-bit), Windows 10 (32/64-bit) support



EcoStruxure Operator Terminal Expert window

### Configuration

EcoStruxure Operator Terminal Expert is an intuitive configuration software that is used to process HMI projects quickly and easily using the 8 configurable windows:

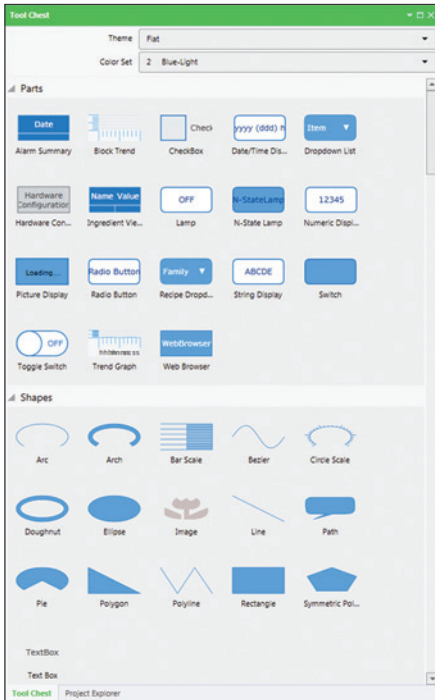
- 1 Tool Chest
- 2 Project Explorer: HMI Content Design, Data Management, Scripts and Actions, System Architecture
- 3 Error window or Feedback zone
- 4 Generic command or Document toolbar
- 5 Editor or Document view
- 6 Application tool bar
- 7 Properties
- 8 Object List

The software also offers a complete set of application management tools for:

- Up to 256 recipes with 600,000 ingredients in total
- Full simulation mode for testing the application from the design office
- Retrieval of symbol files for PLC variables generated by TwidoSuite, PL7, Concept, ProWORX 32, and Unity Pro software (2)

(1) What You See Is What You Get (on the screen of the target terminal).

(2) DDT structured types and “unlocated” variables are not supported in this version.



Parts and Shapes

### Graphics editor

The graphics editor offers interface consistency for simple and more sophisticated objects. This helps application developers to easily create views based on:

- Parts:
  - switches (toggle, radio, selector), lamps
  - text or number fields
  - alarm, trends, recipe ingredient viewer, web browser (1), etc.
- Shapes to be configured:
  - lines, rectangles, ellipses, arcs
  - polylines, polygons, Bézier curves, scales
  - text and images, etc.

### Object animations

9 types of graphic-object animations support the rapid creation of animated mimics on the basis of:

- Pressing the touch panel
- Changing of color
- Filling
- Movement
- Rotation
- Size
- Visibility
- Display of associated value
- Object redesign



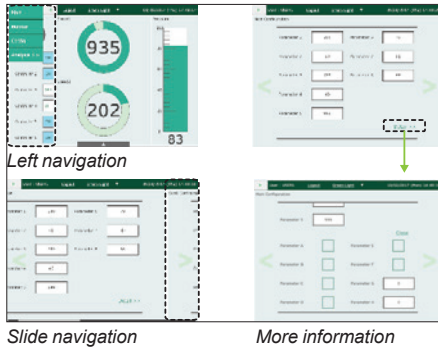
Predefined Images

### Predefined Images library

The graphic objects library contains objects for efficiently organizing around the business segments. Using the simple “drag and drop” method, images can be positioned with the mouse on the mimic being created.

(1) Supported in Magelis GTU Open Box/iPCs.

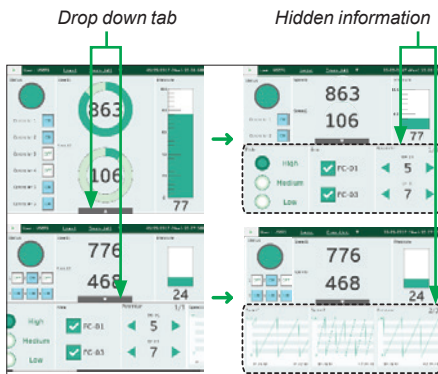




### Key features

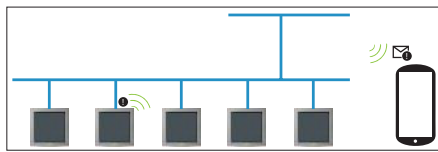
#### Runtime Navigation

- Automatic menu generation
- Efficient usage of space: permanent or hidden menus, scroll within the menu that is independent of the rest of the screen
- Less engineering: all information on one screen, free of hierarchies



#### Layout Objects (DockPanel)

- Embed several pages in one screen and navigate independently in each section
- Screens are automatically resized to fit into the frame
- Frame sizes can be dynamically changed to show different content



#### Web Server API

- Interface for browsers, both desktop and mobile:
  - Enables delivery of information independent of time and place to any HTML5 browser
  - Enables fast HMI agnostic development of specific customer/use case tailored UI
- WebSockets for subscription based notifications (events) like alarm notifications, system error notifications, etc.
- User Management support (user name/password)



#### Themes and Color set

- Theme (Studio/Flat themes) and color (10 sets) to preset design
- Quick customization and design consistency by utilizing themes
- Product differentiation



### Communication protocols between HMI application and PLCs

Communication is established between the HMI application and the connected control equipment using a communication protocol (driver) that is selected when creating the application in EcoStruxure Operator Terminal Expert.

#### Schneider Electric protocols

EcoStruxure Operator Terminal Expert supports the following protocols:

- Schneider Electric SA
  - MODBUS TCP Master
  - MODBUS TCP Master USB Equipment
  - MODBUS SIO Master
  - MODBUS SIO Master CT Equipment
  - Uni-Telway
  - PacDrive Ethernet Cx00 - (Codesys V3.5)
  - PacDrive Ethernet LMC x00C - (Codesys V3.5)
  - MODBUS TCP Slave
  - MODBUS SIO Slave
  - MODBUS SIO ASCII Master
  - Zelio Logic
  - EcoStruxure Augmented Operator Advisor
- Siemens AG
  - SIMATIC S7 MPI Direct
  - SIMATIC S7 MPI Direct - 12M (CoPla)
  - SIMATIC S7 Ethernet (LOGO!8 support)
- Rockwell Automation
  - EtherNet/IP
  - DF1
  - DH-485
- Mitsubishi Electric Corporation
  - Q/QnA Series Ethernet
  - Q Series CPU Direct
  - Q/QnA Series Serial
  - FX Series CPU Direct
  - FX Series Ethernet
  - FX Series Computer Link
  - Q Series QnU CPU Ethernet
  - iQ-R/F Series Ethernet
- OMRON Corporation
  - CS/CJ Series HOST Link
  - CS/CJ Series Ethernet
  - CS/CJ/NJ Series EtherNet/IP
- Emerson Process management v Modbus SIO Master
  - ROC Plus SIO
  - ROC Plus Ethernet
- CAN in Automation
  - CANopen Slave (CoPla)
- PROFIBUS International
  - PROFIBUS DP Slave (CoPla)
- Crouzet Automation
  - Millenium 3

All Schneider Electric drivers provide IEC access to input bits/words and output bits/words: Modbus (RTU and TCP/IP), Modbus Plus (GMU and USB), Uni-Telway, Xway.

The direct I/O access authorizes access to hardware input and output registers.

### Communication protocols between HMI application and PLCs (continued)

#### PLC symbols link (1)

EcoStruxure Operator Terminal Expert supports the following protocols:

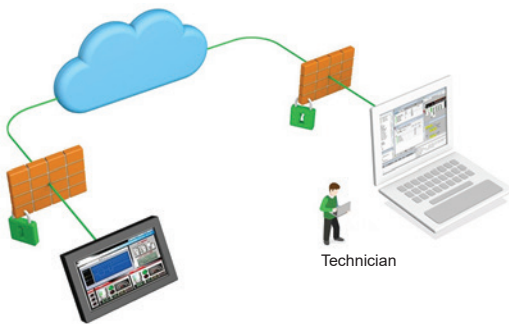
- Schneider Electric SA
  - SoMachine Basic (SMBP format)
  - SoMachine (XML format)
  - SoMachine Motion (XML format)
  - Unity Pro (XVM/XSY format, unallocated variables supported)
- OMRON Corporation
  - Sysmac Studio (NJ series)
- Rockwell Automation
  - RSLogix 5000 (L5K format)

#### Companion products (2)

EcoStruxure™ Secure Connect Advisor provide a secure connection between remote display units on the work site (via SiteManager Embedded) and computers or smart devices in the office (via LinkManager) over a secure central server (GateManager). With EcoStruxure™ Machine Secure Connect Advisor, maintenance personnel can access Schneider Electric software and update it remotely and securely via the HMI, PLC, and other connected devices as if they were on site. Troubleshooting and repair can also be performed remotely upon request.

(1) Including import of structured variables such as UDTs and ARRAY (of UDT).

(2) For more information, please refer to "EcoStruxure™ Secure Connect Advisor catalog" available on our website [www.schneider-electric.com](http://www.schneider-electric.com).



# Human Machine Interfaces

## EcoStruxure Operator Terminal Expert



EcoStruxure Operator Terminal Expert

### References

The EcoStruxure Operator Terminal Expert configuration software is compatible with Magelis GTU/ STO7/GTO/ST6 terminals and Magelis iPCs. The software (2) can be downloaded or purchased as DVD from our website [www.schneider-electric.com](http://www.schneider-electric.com).

EcoStruxure Operator Terminal Expert commercial licenses are available in two formats.

- Printed license: delivered by regular mail with ID authorization
- Digital license: delivered by e-mail after registering with Schneider Electric Customer Care Center

All EcoStruxure Operator Terminal Expert licenses listed below comprise:

- User documentation in electronic format, including:
  - Online help for the software
  - User Manual for the supported targets
  - Setup Manual for the different protocols supported
- Supported communication protocols

A dedicated web portal [www.schneider-electric.com/licensing](http://www.schneider-electric.com/licensing) is available for easy registration and management of software licenses. With this portal, you can access new functions and have more control over your license:

- Instant license activation and easy account management
- Online view of license status from anywhere

### EcoStruxure Operator Terminal Expert

#### Printed licenses

Description	License type	Application transfer cable		Reference
		PC side port	Terminal side	
<b>EcoStruxure Operator Terminal Expert Professional Single license</b>	1 seat	USB/ Ethernet	Magelis GTU Magelis GTO Magelis STO7	<b>HMIPELCZLSPMZZ</b>
<b>EcoStruxure Operator Terminal Expert Professional Group License</b>	3 seats		Magelis ST6 Magelis iPCs and other PCs	<b>HMIPELCZLGP MZZ</b>
<b>EcoStruxure Operator Terminal Expert Professional Team license</b>	10 seats			<b>HMIPELCZLTPMZZ</b>
<b>EcoStruxure Operator Terminal Expert Runtime license for Windows</b>	Runtime			<b>HMIRTWCZLSPMZZ</b>
<b>EcoStruxure Operator Terminal Expert Basic license</b>	Basic 1 seat		Magelis STO7 Magelis ST6	<b>HMIPELCZLSPMZZ</b>
<b>EcoStruxure Operator Terminal Expert DVD Software 3.1</b>	–	–	–	<b>HMIPEDCZ31</b>

#### Digital licenses (1)

<b>EcoStruxure Operator Terminal Expert Professional Single license</b>	1 seat	USB/ Ethernet	Magelis GTU Magelis GTO Magelis STO7	<b>HMIPELCZLSPA ZZ</b>
<b>EcoStruxure Operator Terminal Expert Professional Group license</b>	3 seats		Magelis ST6 Magelis iPCs and other PCs	<b>HMIPELCZLGP A ZZ</b>
<b>EcoStruxure Operator Terminal Expert Professional Team license</b>	10 seats			<b>HMIPELCZLTP A ZZ</b>
<b>EcoStruxure Operator Terminal Expert Professional Fixed Term license 3 months</b>	1 seat			<b>HMIPEXCZLSRA ZZ</b>
<b>EcoStruxure Operator Terminal Expert Runtime license for Windows</b>	Runtime		Magelis iPCs and other PCs	<b>HMIRTWCZLSPA ZZ</b>
<b>EcoStruxure Operator Terminal Expert Basic license</b>	Basic 1 seat	–	Magelis STO7 Magelis ST6	<b>HMIPELCZLSPA ZZ</b>

(1) Please contact Schneider Electric Customer Care Center to check if the digital licenses are distributed/available in your country.

(2) After installation, the trial version of the software is available for 42 days and will have to be activated with the commercial license.

**Note:** The EcoStruxure Operator Terminal Expert Runtime installer uninstalls Vijeo Designer Runtime, but Vijeo Designer Runtime can be reinstalled again with EcoStruxure Operator Terminal Expert Runtime.

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HMIEELCZLSPMZZ	11
HMIEELCZLSPAZZ	11
HMIPEDCZ31	11
HMIPELCZLGPAZZ	11
HMIPELCZLGPMZZ	11
HMIPELCZLSPAZZ	11
HMIPELCZLSPMZZ	11
HMIPEXCZLSRAZZ	11
HMIPELCZLTPAZZ	11
HMIPELCZLTPMZZ	11
HMIRTWCZLSPAZZ	11
HMIRTWCZLSPMZZ	11



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Photos: Schneider Electric

# Human/Machine Interfaces

EcoStruxure™ Machine SCADA Expert

Catalog

February 2019



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- Download Digi-Cat from this address:

<http://digi-cat.schneider-electric.com/download.html>



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- Locate the training center with the selector tool, using this address:

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then click on

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# General contents

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### EcoStruxure™ Machine SCADA Expert

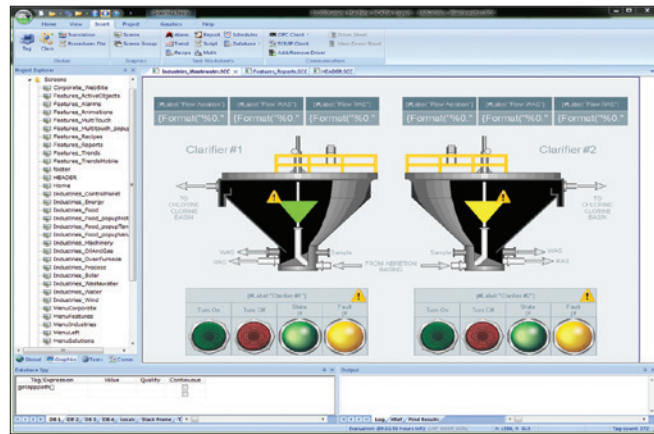


EcoStruxure Machine SCADA Expert enables you to use the key features of Microsoft operating systems and build a full-featured SCADA or HMI project for your industrial automation business.

For applications ranging from complex machine control and monitoring to plant supervision and SCADA, EcoStruxure Machine SCADA Expert with Magelis iPC/ Magelis GTU Open Box bundle makes industrial operations smooth and stress-free.

EcoStruxure Machine SCADA Expert is designed in a modern, ribbon-based Windows interface to provide an integrated and user-friendly development environment.

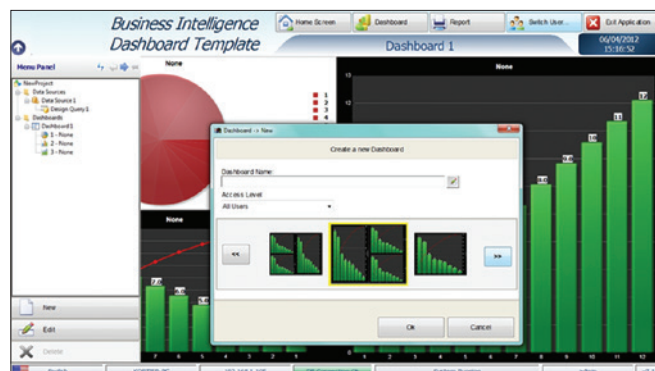
EcoStruxure Machine SCADA Expert supports capabilities like scripting, animation, E-mail, recipes, security, tags database, multi-touch, alarms, trends, scalability, multi-language, FDA traceability, PDF export, and so on.



EcoStruxure Machine SCADA Expert development environment

#### Saves time

- > Quick and easy installation on Magelis iPCs
- > Fully tested and validated bundle means that testing and commissioning days can be saved
- > Build applications with ready-to-use PackML and OEE templates
- > Generate reports compliant with CFR21 automatically
- > Minimize migration time from FactoryTalk™ to EcoStruxure Machine SCADA Expert by automatically converting FactoryTalk ME/SE applications to EcoStruxure Machine SCADA Expert (graphical interface, communication interface, tags, etc.) using the Import Wizard
- > Information at a Glance using Business Intelligence Dashboard Template



Business Intelligence Dashboard Template

EcoStruxure Machine SCADA Expert + Magelis iPC/GTU Open Box bundle → Smart SCADA solution

### Cost-effective

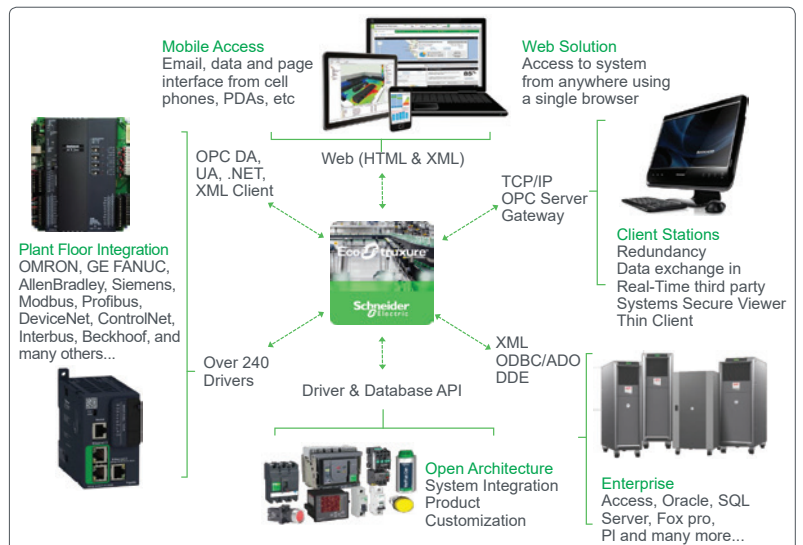
- Track and analyze the performance of your data with embedded EcoStruxure Machine SCADA Expert historian and OEE templates
- Single point of contact for hardware/software/operating system integration and support
- Access SCADA level software with all its benefits and receive alarms by e-mail
- Easy maintenance of machine with long-term hardware supply and availability
- Buy EcoStruxure Machine SCADA Expert as per your requirement with size-based license pricing



EcoStruxure Machine SCADA Expert Runtime environment


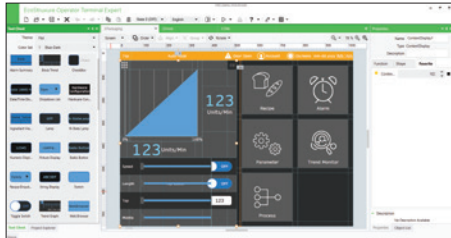
### Good connectivity and data management

- Realize the power of the IoT with EcoStruxure Machine SCADA Expert's extensive IT and OT driver library and data management capabilities (connection between ERP, MES, third-party historians, and the plant floor)
- Supports 200+ native communication drivers for PLCs, temperature controllers, motion controllers, bar code/2D/RFID readers, and many more devices
- Native OPC interface, including OPC UA, OPC DA, OPC XML, and OPC .NET to communicate with OPC servers
- With EcoStruxure Machine SCADA Expert Mobile access, you can use your tablet or smart phone to connect remotely


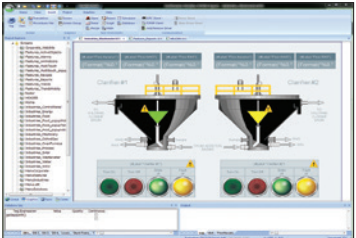

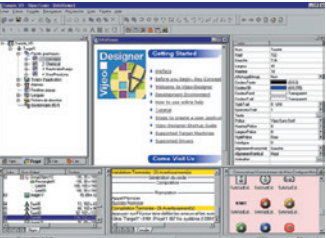


Open architecture

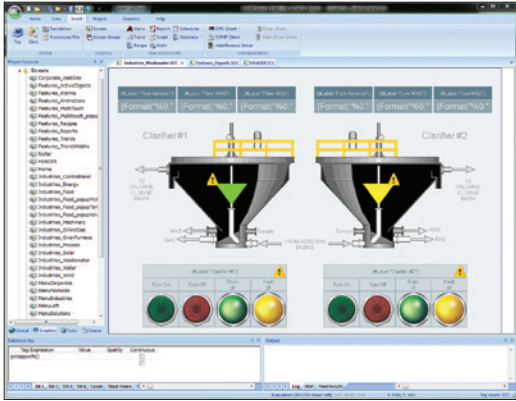
### Open architecture and easy-to-configure database interface

Applications		Touchscreen Configuration software with UI design and gestures
		 
<b>Compatible products</b>	Type	Magelis™ STO Color Magelis ST6 Magelis GTO Advanced panels and Magelis GTU Universal panels Magelis Industrial PCs Windows compatible computers
	Maximum number of targets	1
	Operating system on terminals	Proprietary for Magelis STO Color, Magelis ST6 and Magelis GTO/GTU Windows Embedded Standard 7 for Magelis Industrial PCs
<b>Functions</b>	Reading/writing of PLC variables	Yes
	Display of variables	Yes
	Data processing	Yes
	Sharing of variables between HMI applications	–
	Saving of variables to external database	–
<b>Internationalization</b>		16 languages supported by 26 type of fonts
<b>Development of graphic applications</b>	Native library of graphic objects	Yes
	Curves and alarms	Yes
	Scripts	Block Script
<b>Communication between HMI application and PLCs</b>		Via I/O drivers: Schneider Electric or third-party protocols (Mitsubishi, Omron, Rockwell Automation, Siemens)
<b>Uploading of applications</b>		–
<b>Simulation of HMI applications</b>		Yes
<b>Recipe management</b>		Yes, up to 256 recipes, 600,000 ingredients in total
<b>Report and barcode printing</b>		–
<b>Screen capture</b>		Yes, for Magelis GTU Open Box and Magelis Industrial PCs. in PNG format
<b>Access security</b>		Password protected
<b>Interface languages</b>		Online Help in 4 languages (English, French, German, Italian), interface in 10 languages (English, French, German, Italian, Portuguese, Spanish, Japanese, Traditional Chinese, Simplified Chinese, Korean)
<b>OS compatibility</b>		Windows 7, Windows 8, Windows 8.1, Windows 10 (32-bit/64-bit)
<b>Software type</b>		<b>EcoStruxure™ Operator Terminal Expert</b>
<b>Pages</b>		For more information, please refer to the EcoStruxure Operator Terminal Expert catalog on our website <a href="http://www.schneider-electric.com">www.schneider-electric.com</a> .

(1) All Magelis XBT and Magelis GTO/GTU terminals behave transparently on restoration of power.  
(2) Depending on compatible product.

Configuration software for data-intensive and complex visualization	Classic Configuration software for the complete HMI range
 	 
Magelis G5U2, Magelis Industrial PCs	Magelis™ STO/STU Small panels Magelis XBTGT/GK/GH/GTO Advanced panels and Magelis GTU Universal panels (1) Magelis Industrial PCs
1	32
Magelis G5U: Windows Embedded 7 Standard Magelis Industrial PCs: Windows Embedded 7 Standard, Windows 7 SP1, Windows 8.1, Windows 10 IoT Enterprise	Proprietary for Magelis™ STO/STU, Magelis™ XBTGT/GK/GH and Magelis™ GTO/GTU Windows XP embedded for Magelis™ GTW
Machine Control: 1,500 tags Line Management: 4,000 tags Line Management Plus: 32,000 tags Supervision: 64,000 tags	Yes, up to 8,000 internal and external variables
Yes, depending on the number of Tags	Yes
Yes, with VBScript or Built-in Scripting	Yes, using expression editor or Java programming
Yes, via TCP/IP, OPC, Driver or Database	Up to 300 variables between 8 terminals, without router PLC Proprietary protocol above TCP/IP
Yes, with relational database (any SQL Database, MS Access and Excel CSV file)	Yes, with the Intelligent Data Service extension
Multi-language (depending on the OS)	Up to 15 languages supported by 34 Western alphabets, 4 Asian alphabets and 2 Middle Eastern alphabets embedded in the application
Yes, user customizable	Yes
Yes	Yes, with log
VBScript and Built-In scripting	Java
Via I/O drivers: Schneider Electric or third-party protocols (Over 250 Drivers: Mitsubishi, Omron, Rockwell Automation, Siemens)	
Yes	–
Yes	
Yes, built-in tools with local file or with SQL DB	Yes, up to 32 groups, 1,024 ingredients for 256 recipes per group, proprietary or CSV format, complete multilingual support for labels and ingredients
Report is a built-in function that executes the specified Report worksheet and sends the output to hard disk, printer, or PDF.	On the fly alarms, log data. Up to 9,999 active alarms, records, or logs Main barcode types supported: UPC-A, UPC-E, JAN/EAN8, JAN/EAN13, ITF, CODE39, CODE93, CODE128, CODABAR (NW-7)
Yes	Yes, for Magelis™ XBTGT (XBTGT1105 and higher), Magelis GTO/GTU, and Magelis Industrial PCs in JPEG format
Linked to user profiles	
Screens, online help, and documentation in electronic format available in 5 languages: English, German, French, Chinese, Japanese	Screens, online help, and documentation in electronic format available in 7 languages: English, French, German, Italian, Portuguese, Simplified Chinese, and Spanish
Windows 7, Windows 8.1, Windows 10 (64-bit), WES7 (64-bit)	Windows XP Professional, Windows 7 Business (32-bit/64-bit)
<b>EcoStruxure™ Machine SCADA Expert</b>	<b>Vijeo Designer™</b>
9	For more information, please refer to the Vijeo Designer HMI configuration software catalog on our website <a href="http://www.schneider-electric.com">www.schneider-electric.com</a> .

(1) All Magelis XBT and Magelis GTO/GTU terminals behave transparently on restoration of power.  
(2) Depending on compatible product.



### Presentation

EcoStruxure™ Machine SCADA Expert is a powerful software suite for developing HMI, SCADA, and OEE/Dashboard projects that can be deployed anywhere. EcoStruxure Machine SCADA Expert bundled with Magelis iPCs/Magelis GTU Open Boxes provides smart SCADA solutions. This software supports English, German, French, Chinese, and Japanese languages.

The EcoStruxure Machine SCADA Expert software project includes project tags database to manage data, configurable drivers to communicate, animated human-machine interface (HMI) screens, overall equipment effectiveness (OEE) dashboards, and optional modules (alarms, events, trends, recipes, complete database interface, security system, etc.).

The project developed can either be run locally on your development workstation or downloaded and run on a remote computer. The project runtime server processes I/O data from connected devices according to your project parameters and then responds to, displays, and/or saves the data.

EcoStruxure Machine SCADA Expert supports numerous features for creating and managing projects for various industrial automation businesses, allowing you to:

- Monitor machines, run VB scripts, generate reports (PDF, XML, HTML, etc.), receive alarm notifications, and follow trends without having to pay for a full SCADA
- Monitor applications remotely through a Web client or tablet and receive alarms via e-mail
- Save time by generating 21CFR part 11 projects with traceability and e-signature
- Improve efficiency with built-in OEE dashboard
- Store production data in local databases (SQL)
- Protect information with database and overall redundancy
- Make use of the Windows environment with EcoStruxure Machine SCADA Expert compatibility
- Thin client function where screen monitoring from Web browser is based on HTML5/dedicated viewer
- Provide necessary tools that allows the user to create a dashboard based on the queries created

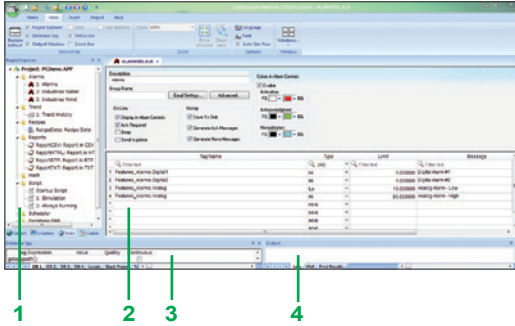
### EcoStruxure Machine SCADA Expert components

The EcoStruxure Machine SCADA Expert suite comprises several individual components that can be installed on various platforms to perform different functions. The architecture of the finished EcoStruxure Machine SCADA Expert project depends upon the components installed, where they have been installed, and how they are connected to each other. The following table lists all the available components.

### Software components

Component	Features	Platforms
EcoStruxure Machine SCADA Expert	<ul style="list-style-type: none"> <li>■ Project development environment</li> <li>■ Tag integration</li> <li>■ Remote management of project runtimes</li> <li>■ Project runtime</li> <li>■ Agent to allow remote management</li> <li>■ Project thin client</li> </ul>	<ul style="list-style-type: none"> <li>■ Windows</li> <li>■ Windows Server</li> <li>■ Windows Embedded Standard</li> </ul>
Mobile Access Runtime	Enables the project runtime to serve HTML5-enhanced project screens to tablets and smart phones	<ul style="list-style-type: none"> <li>■ Internet Information Services (IIS) for Windows</li> <li>■ Any CGI-enabled web server (e.g. Apache)</li> </ul>
Secure Viewer	Project thin client, as a standalone program	<ul style="list-style-type: none"> <li>■ Windows</li> <li>■ Windows Server</li> <li>■ Windows Embedded Standard</li> </ul>





EcoStruxure Machine SCADA Expert Buildtime environment

### Configuration

The complete EcoStruxure Machine SCADA Expert includes both the project development and the project runtime environments. EcoStruxure Machine SCADA Expert incorporates a modern, ribbon-based Windows interface to provide an integrated and user-friendly development environment.

The project development environment allows you to design, develop, troubleshoot, deploy, and maintain EcoStruxure Machine SCADA Expert projects. The user interface for the EcoStruxure Machine SCADA Expert development environment includes:

- 1 Project Explorer: Organizes all the screens, worksheets, and other items that comprise your project and presents them in an expandable tree-view.
- 2 Screen/Worksheet Editor: Uses the powerful object-oriented screen editor to create and edit a variety of screens and worksheets for the projects.
- 3 Database Spy: Debugging window that allows you to monitor and force values to project tags, execute and test functions, and execute and test math expressions.
- 4 Output (LogWin): Displays additional information about the project.



EcoStruxure Machine SCADA Expert Runtime environment

The project runtime environment runs the project, communicates with external databases and devices, and serves project screens to thin clients.



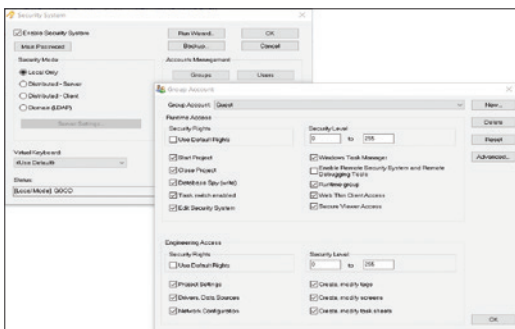
FDA traceability

### Key features

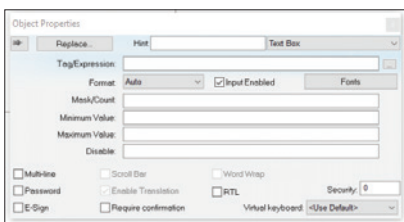
#### FDA traceability

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

- Security system: The security system for the whole application can be enabled or disabled with the "Enable Security System" check-box.
- Electronic signature (E-Sign): The objects and animations enable you to perform a task during runtime and enforce an electronic signature (E-Sign) to execute the task.



Security system



Electronic signature



Standards

### Key features (continued)

#### Standards

Supports common industry standards for developing projects that are compatible with any format. TCP/IP, ActiveX/.NET, OPC (client and server), ODBC/ADO, COM/DCOM, OLE, DDE, XML, SOAP, and HTML are all supported.

#### Drivers

The EcoStruxure Machine SCADA Expert includes over 250 built-in communication drivers for most PLCs, temperature controllers, motion controllers, barcode/RFID readers, and other devices. These drivers enable the integration of multiple devices and systems from the plant floor to the ERP/Cloud in a seamless manner. Also, the Schneider Electric driver toolkits provide the flexibility to build your own drivers.

#### Mobile access thin clients

With this feature, you can remotely view project screens on several different types of thin client. The HTML5-enabled Mobile Access also allows you to access projects from almost any other computer or mobile device. A high level of security can be achieved on plant-floor stations using the standalone Secure Viewer.

#### OLE for Process Control (OPC)

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

### Companion products (1)

EcoStruxure™ Secure Connect Advisor provide a secure connection between remote display units on the work site (via SiteManager Embedded) and computers or smart devices in the office (via LinkManager) over a secure central server (GateManager). With EcoStruxure Secure Connect Advisor, maintenance personnel can access Schneider Electric software and update it remotely and securely via the HMI, PLC, and other connected devices as if they were on site. Troubleshooting and repair can also be performed remotely upon request.

### References

EcoStruxure Machine SCADA Expert is compatible with Magelis iPCs and Magelis GTU Open Boxes. The software licensing and activation process is managed by e-mail as follows:

- 1 On purchase of the product, the EcoStruxure Machine SCADA Expert activation key is provided in paper format.
- 2 After installing the project development or runtime software, a unique site code will be generated.
- 3 Send an e-mail with the activation key and site code to [SiteKeyLicense.Support@schneider-electric.com](mailto:SiteKeyLicense.Support@schneider-electric.com) requesting the site key, which will be sent in an e-mail.
- 4 Input the site key on your computer or target device to activate the EcoStruxure Machine SCADA Expert.

EcoStruxure Machine SCADA Expert supports the following execution modes:

- Evaluation mode enables you to use all the engineering and runtime features of the product. When EcoStruxure Machine SCADA Expert is installed on the computer for the first time, the product runs for forty hours in Evaluation mode and then automatically converts to Demo mode.
- Demo mode enables you to download projects to remote stations and run then for testing or demonstration. You can execute runtime tasks and use debugging tools, which will shut down automatically after running continuously for two hours.
- Licensed for Engineering only mode enables all development options for an unlimited time. You can execute runtime tasks and use debugging tools continuously for 72 hours. This license can be used for development and testing only.
- Licensed for Runtime only mode enables all runtime tasks and debugging tools for an unlimited time, but cannot create or modify screens/worksheets.
- Licensed for Engineering + Runtime mode enables all development options, runtime tasks, and debugging tools for an unlimited time.

(1) For more information, please refer to "EcoStruxure Secure Connect Advisor catalog" available on our Website [www.schneider-electric.com](http://www.schneider-electric.com).





## EcoStruxure Machine SCADA Expert references

Description	License type	Compatible with	Reference
<b>DVD references</b>			
EcoStruxure Machine SCADA Expert for Supervision, 64,000 Tags	Buildtime DVD	HMIPW●7●●, HMIPV●7●●, HMIPU●7●●, HMIPP●7●●,	HMIVXLBT64KDV80
EcoStruxure Machine SCADA Expert for Line Management Plus, 32,000 Tags	Buildtime DVD	HMIPW●5●●, HMIPU●9●●, HMIPP●9●●, HMIPP●10●●, HMIPT●7●●, HMIPR●7●●,	HMIVXLBT32KDV80
EcoStruxure Machine SCADA Expert for Line Management, 4,000 Tags	Buildtime DVD	HMIPSP●●, HMIPEP●●, HMIPSO●●, HMIBU●●, HMIBP●●, HMIBMU●●, HMIBMP●●, HMIR●O,	HMIVXLBT4KDV80
EcoStruxure Machine SCADA Expert for Machine Control, 1,500 Tags	Buildtime DVD	HMIG5UL8B (1)	HMIVXLBT1KDV80
<b>Paper license references</b>			
EcoStruxure Machine SCADA Expert for Supervision, 64,000 Tags	Buildtime license	HMIPP●7●●, HMIPW●5●●, HMIPU●9●●, HMIPP●9●●, HMIPP●10●●, HMIPT●7●●,	HMIVXLBT64KLV80
EcoStruxure Machine SCADA Expert for Line Management Plus, 32,000 Tags	Buildtime license	HMIPR●7●●, HMIPSP●●, HMIPEP●●, HMIPSO●●, HMIBU●●, HMIBP●●, HMIBMU●●, HMIBMP●●, HMIR●O, HMIG5UL8B (1)	HMIVXLBT32KLV80
EcoStruxure Machine SCADA Expert for Line Management, 4,000 Tags	Buildtime license		HMIVXLBT4KLV80
EcoStruxure Machine SCADA Expert for Machine Control, 1,500 Tags	Buildtime license		HMIVXLBT1KLV80
EcoStruxure Machine SCADA Expert for Supervision, 64,000 Tags	Runtime license		HMIVXLR64KLV80
EcoStruxure Machine SCADA Expert for Line Management Plus, 32,000 Tags	Runtime license		HMIVXLR32KLV80
EcoStruxure Machine SCADA Expert for Line Management, 4,000 Tags	Runtime license		HMIVXLR4KLV80
EcoStruxure Machine SCADA Expert for Machine Control, 1,500 Tags	Runtime license		HMIVXLR1KLV80
EcoStruxure Machine SCADA Expert USB hard key	USB dongle		HMIVXLUSBL
PanelBuilder Import Wizard, PanelMate Import Wizard and FactoryTalk Import Wizard are included	Import Wizard licenses		HMIVXLTK
Thin Client License for Secure Viewer and Mobile Access	Thin Client License		HMIVXLTC
Upgrade Buildtime license from 32,000 tags to 64,000 tags	Paper license		HMIVXLUG64KBT
Upgrade Buildtime license from 4,000 tags to 32,000 tags	Upgrade license		HMIVXLUG32KBT
Upgrade Buildtime license from 1,500 tags to 4,000 tags	Upgrade license		HMIVXLUG4KBT
Upgrade Runtime license from 32,000 tags to 64,000 tags	Upgrade license		HMIVXLUG64KRT
Upgrade Runtime license from 4,000 tags to 32,000 tags	Upgrade license		HMIVXLUG32KRT
Upgrade Runtime license from 1,500 tags to 4,000 tags	Upgrade license		HMIVXLUG4KRT
Version up license for Supervision (Build time), 64000 Tags	Version up license		HMIVXLVU64KBT
Version up license for Line Management Plus (Build time), 32000 Tags	Version up license		HMIVXLVU32KBT
Version up license for Line Management (Build time), 4000 Tags	Version up license		HMIVXLVU4KBT
Version up license for Machine Control (Build time), 1500 Tags	Version up license		HMIVXLVU1KBT
Version up license for Supervision (Runtime), 64000 Tags	Version up license		HMIVXLVU64KRT
Version up license for Line Management Plus (Runtime), 32000 Tags	Version up license		HMIVXLVU32KRT
Version up license for Line Management (Runtime), 4000 Tags	Version up license		HMIVXLVU4KRT
Version up license for Machine Control (Runtime), 1500 Tags	Version up license		HMIVXLVU1KRT

(1) For EcoStruxure Machine SCADA Expert V8.1.

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HMIVXLVU64KBT	9
HMIVXLVU64KRT	9



[www.schneider-electric.com/hmi](http://www.schneider-electric.com/hmi)

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Design: Schneider Electric  
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# EcoStruxure™ Secure Connect Advisor

Catalog

June 2019



EcoStruxure™ Secure Connect Advisor

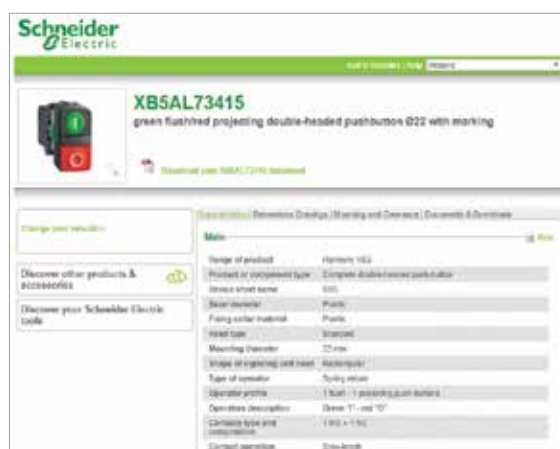
# Quick access to product information

## Get technical information about your product



Each commercial reference presented in a catalog contains a hyperlink. Click on it to obtain the technical information of the product:

- Characteristics, Dimensions and drawings, Mounting and clearance, Connections and schemas, Performance curves
- Product image, Instruction sheet, User guide, Product certifications, End of life manual



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# General contents

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# EcoStruxure™ Secure Connect Advisor

Secure remote access to machine or plant



EcoStruxure Secure Connect Advisor

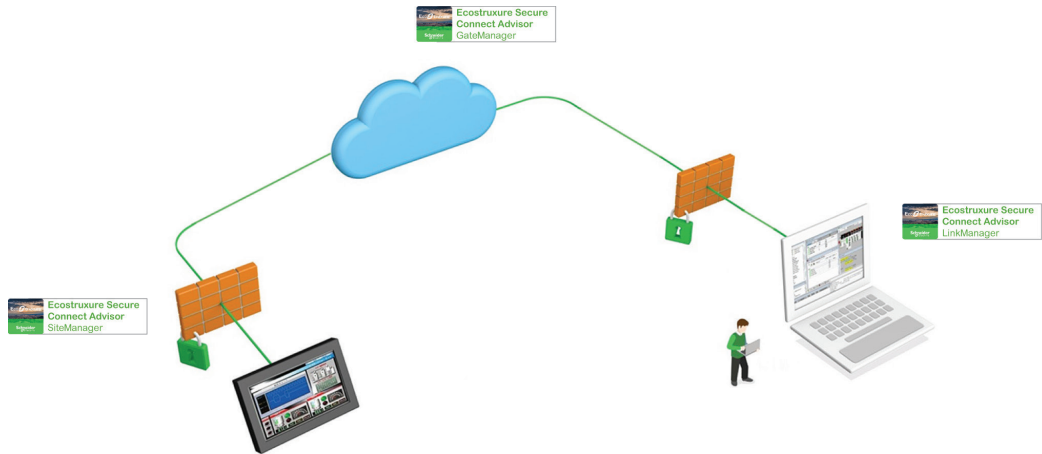
## Presentation

EcoStruxure Secure Connect Advisor provides a secure connection between remote display units on the work site (via SiteManager Embedded) and computers or smart devices in the office (via LinkManager) over a secure central server (GateManager).

With EcoStruxure Secure Connect Advisor, technicians and programmers can remotely access the Schneider Electric software and securely update it via the HMI, PLC, and other connected devices just as though they were present on site. Troubleshooting and repair can also be performed remotely upon request. EcoStruxure Secure Connect Advisor LinkManager client for remote access runs on any 32-bit or 64-bit version of Microsoft Windows Vista, Windows 7, Windows 8.x, or Windows 10 operating system. This software adapts to a number of applications such as:

- > Food & Beverage
- > Mining, Minerals & Metals
- > Oil and Gas
- > Water and Wastewater, etc.

EcoStruxure Secure Connect Advisor SiteManager software is either pre-embedded (in Magelis HMI) or manually installable on compatible Schneider Electric HMI models.

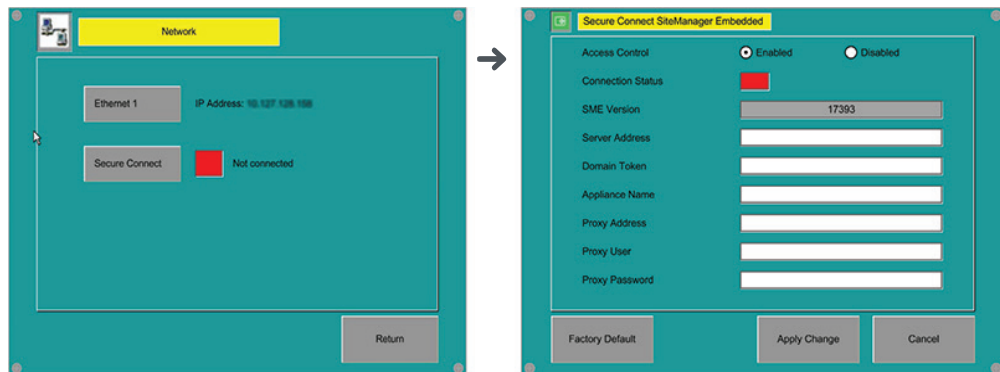


EcoStruxure Seure Connect Advisor concept

## Benefits

### Efficient and easy to use

- > Embedded and ready to use in Magelis HMI offers (terminals and industrial PC)



Configuration screen

- > Gain remote access to programming, diagnostics, control, and monitoring
- > Speed up machine operation and reduce machine downtime

### Easy to subscribe

- > Purchase just one annual subscription
- > Choose the “remote service pack” adapted to your needs and, in less than half an hour, you can connect to a remote machine



# EcoStruxure™ Secure Connect Advisor

Secure remote access to machine or plant

## Easy to scale, whenever you need

- > Increase the number of LinkManager users or LinkManager mobile users
- > Increase access to more HMI units with site manager embedded
- > Program more devices

## Works everywhere, for everyone

- > Operable for all applications and segments
- > Available from desktop or smartphone

## Reliable and safe

- > Cybersecure (end to end) for both OEMs and end users, and certified by **Protectem** for cybersecurity
- > Secure access to remote devices over the internet
- > Compliant with industry level standards for security, including IEC 62443-3-3

## License options for usage flexibility

- > Advanced settings on GateManager secure server
- > Various user statistics available
- > Extended licenses to program more devices (PLC, drives, etc.) connected to the HMI

## Architecture

The EcoStruxure Secure Connect Advisor solution comprises three components:

- **GateManager:** The GateManager server operates as a central point for the LinkManager and SiteManager. Both the SiteManager and the LinkManager must be registered with the GateManager before access is provided to the SiteManager network. This creates an encrypted connection between the SiteManager and LinkManager remote computer.

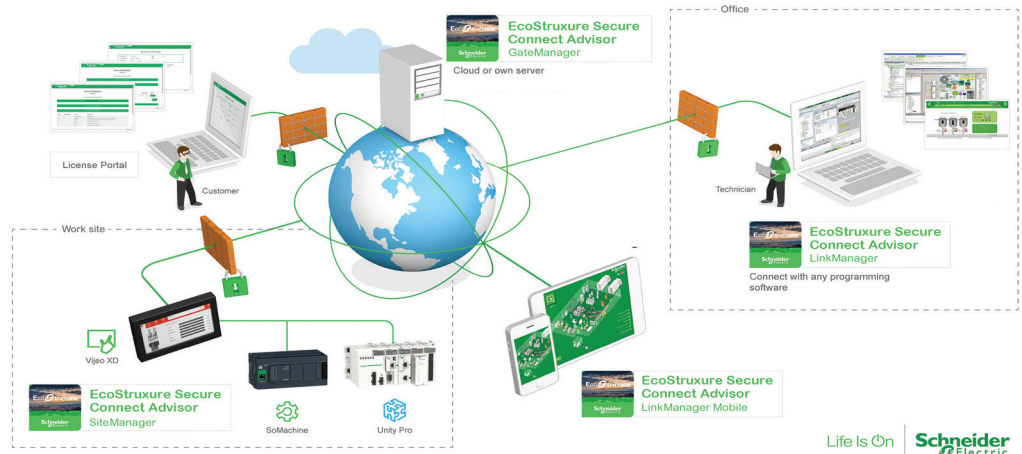
- **SiteManager Embedded (1):** The SiteManager is the embedded component in the existing HMI configuration software. It is the device-monitoring front end for multiple industrial devices in a remote location and enables uninterrupted secure access via GateManager.

It can be purchased in two license formats:

- Basic, for accessing 1 display unit and registering up to 2 agents per display unit
- Extended, for accessing external IP devices (PLCs, iPCs, server, Web camera, etc.) on the same network as the display unit and registering five or more agents per display unit

- **LinkManager/LinkManager Mobile:** The LinkManager is the client on the remote operator's computer. After installation, the user will be able to securely login to the GateManager and remotely connect to the devices represented by the agents on the SiteManager, including the HMI and its connected devices.

LinkManager Mobile is a lightweight version that can be used for Web-enabled devices such as smartphones or tablets to connect to SiteManager.



EcoStruxure Secure Connect Advisor for remote programming access to HMI and its connected devices

(1) The setup method for SiteManager Embedded differs depending on the display unit. For more information, please refer to the EcoStruxure Secure Connect Advisor User Guide available on our website [www.schneider-electric.com](http://www.schneider-electric.com).

### EcoStruxure Secure Connect Advisor compatibility

The following Magelis HMIs are compatible with EcoStruxure Secure Connect Advisor (including SiteManager Embedded):

- Magelis S-Panel iPC (Performance and Optimized)
- Magelis Box iPC (Modular Universal/Performance, S-Box Universal)
- Magelis GTU terminals
- Magelis GTO terminals (1)

### References

EcoStruxure Secure Connect Advisor is available with the following HMI configuration software:

- Vjeo Designer
- EcoStruxure Operator Terminal Expert

For more information on supported software versions, please refer to the EcoStruxure Secure Connect Advisor User Guide or product data sheet available on our website [www.schneider-electric.com](http://www.schneider-electric.com).

### EcoStruxure Secure Connect Advisor digital licenses

Description	License type	Compatible terminals	Reference
<b>EcoStruxure Secure Connect Advisor 30-day Free Trial</b>	30-day trial version (free)	Magelis GTU Magelis GTO (1) Magelis iPCs	<a href="#">VJOCNTFREE30</a>
<b>EcoStruxure Secure Connect Advisor Secure Remote Access Digital License - Essential Pack</b>	1x EcoStruxure Secure Connect Advisor GateManager 1x EcoStruxure Secure Connect Advisor SiteManager Embedded EXTENDED license (5 device agents) 1x EcoStruxure Secure Connect Advisor LinkManager 1x EcoStruxure Secure Connect Advisor LinkManager Mobile		<a href="#">VJOCNTPACKES</a>
<b>EcoStruxure Secure Connect Advisor Secure Remote Access Digital License - Enterprise Pack</b>	1x EcoStruxure Secure Connect Advisor GateManager 20x EcoStruxure Secure Connect Advisor SiteManager Embedded EXTENDED license (5 device agents) 1x EcoStruxure Secure Connect Advisor LinkManager 1x EcoStruxure Secure Connect Advisor LinkManager Mobile 1x EcoStruxure Secure Connect Advisor GateManager Premium Access		<a href="#">VJOCNTPACKENT</a>

(1) Except for [HMIGTO1300](#) and [HMIGTO2300](#).

## References

The following add-on references may be added to any EcoStruxure Secure Connect Advisor Pack to extend functionality:

EcoStruxure Secure Connect Advisor digital licenses			
Description	License type	Compatible terminals	Reference
EcoStruxure Secure Connect Advisor LinkManager License	LinkManager	Magelis GTU Magelis GTO (1) Magelis iPCs	<a href="#">VJOCNTLML</a>
EcoStruxure Secure Connect Advisor LinkManager Mobile License	LinkManager Mobile		<a href="#">VJOCNTLMM</a>
EcoStruxure Secure Connect Advisor SiteManager Embedded BASIC licenses	SiteManager Embedded BASIC		<a href="#">VJOCNTSMBASIC</a>
EcoStruxure Secure Connect Advisor SiteManager Embedded EXTENDED license, 5 device agents	SiteManager Embedded EXTENDED		<a href="#">VJOCNTSMEXT5</a>
1x EcoStruxure Secure Connect Advisor SiteManager Embedded EXTENDED license, 10 device agents	SiteManager Embedded EXTENDED		<a href="#">VJOCNTSMEXT10</a>
EcoStruxure Secure Connect Advisor GateManager Premium Access	GateManager Premium Access		<a href="#">VJOCNTGMPREM</a>
EcoStruxure Secure Connect Advisor User Statistics Activation			<a href="#">VJOCNTSTAT</a>
EcoStruxure Secure Connect Advisor Termination of pack			<a href="#">VJOCNTTERM</a>
EcoStruxure Secure Connect Advisor User Statistics Termination			<a href="#">VJOCNTENDSTAT</a>

(1) Except for [HMIGTO1300](#) and [HMIGTO2300](#).

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V	
VJOCNTENDSTAT	5
VJOCNTFREE30	4
VJOCNTGMPREM	5
VJOCNTLML	5
VJOCNTLMM	5
VJOCNTPACKENT	4
VJOCNTPACKESS	4
VJOCNTSMBASIC	5
VJOCNTSMEXT5	5
VJOCNTSMEXT10	5
VJOCNTSTAT	5
VJOCNTTERM	5



[www.schneider-electric.com/ecostruxure-secure-connect-advisor](http://www.schneider-electric.com/ecostruxure-secure-connect-advisor)

#### Schneider Electric Industries SAS

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F-92500 Rueil-Malmaison  
France

The information provided in this documentation contains general descriptions and/or technical characteristics of the performance of the products contained herein. This documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user applications. It is the duty of any such user or integrator to perform the appropriate and complete risk analysis, evaluation and testing of the products with respect to the relevant specific application or use thereof. Neither Schneider Electric nor any of its affiliates or subsidiaries shall be responsible or liable for misuse of the information contained herein.

Design: Schneider Electric  
Photos: Schneider Electric

# EcoStruxure™ Augmented Operator Advisor

Catalog  
June 2019



EcoStruxure Augmented Operator Advisor

Schneider  
Electric

# Quick access to product information

## Get technical information about your product

References

**Telefast Pre-wired System**  
Modicon ABE9 IP 67 passive splitter boxes

References					
Splitter boxes with connection by M23 connector					
Number of channels	Connection by	LED indicator	Reference	Weight (kg)	
4	4 x M12 female connection	Yes	ABE912W1223	0.280	
6	6 x M12 female connection	Yes	ABE912W1226	0.370	
8	8 x M12 female connection	Yes	ABE912W1228	0.500	
12	12 x M12 female connection	Yes	ABE912W1236	0.750	
16	16 x M12 female connection	Yes	ABE912W1248	1.000	
Splitter boxes with connection by cable					
Number of channels	Connection by	Length (m)	LED indicator	Reference	Weight (kg)
4	4 x M12 female connectors	14.4	No	ABE912W1245	0.280
6	6 x M12 female connectors	14.4	No	ABE912W1246	0.400
8	8 x M12 female connectors	14.4	No	ABE912W1247	0.520
12	12 x M12 female connectors	14.4	No	ABE912W1248	0.750
16	16 x M12 female connectors	14.4	No	ABE912W1249	1.000

**Schneider Electric**

**XB5AL73415**  
green flush/red projecting double-headed pushbutton Ø22 with marking

Download your XB5AL73415 datasheet

Change your selection

Discover other products & accessories

Discover your Schneider Electric tools

Characteristics | Dimensions Drawings | Mounting and Clearance | Documents & Downloads

**Main**

Range of product	Harmony XB5
Product or component type	Complete double-headed push-button
Device short name	XB5
Bezel material	Plastic
Fixing collar material	Plastic
Head type	Standard
Mounting diameter	22 mm
Shape of signaling unit head	Rectangular
Type of operator	Spring return
Operator profile	1 flush - 1 projecting push-buttons
Operators description	Green "I" - red "O"
Contacts type and composition	1 NO + 1 NC
Contact operation	Slow-break

Each commercial reference presented in a catalog contains a hyperlink. Click on it to obtain the technical information of the product:

- Characteristics, Dimensions and drawings, Mounting and clearance, Connections and schemas, Performance curves
- Product image, Instruction sheet, User guide, Product certifications, End of life manual

## Find your catalog



- > With just 3 clicks, you can reach the Industrial Automation and Control catalogs, in both English and French
- > Download Digi-Cat with this [link](#)

- Updated quarterly
- Embeds product selectors and configurators, 360° images, training centers,
- Optimized search by commercial reference

## Select your training



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- > Locate the training center with the selector tool, using this [link](#)



# General contents

## EcoStruxure™ Augmented Operator Advisor

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□ Speed-up operation and maintenance.....	<i>page 3</i>
□ Fewer human errors .....	<i>page 3</i>
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# EcoStruxure Augmented Operator Advisor

Solution for industrial augmented reality applications

## EcoStruxure™ Augmented Operator Advisor



EcoStruxure Augmented Operator Advisor

EcoStruxure Augmented Operator Advisor puts real-time information at your fingertips, whenever and wherever it is needed. The custom application improves operational efficiency with augmented reality, enabling operators to superimpose current data and virtual objects onto a cabinet, machine, or plant. This software combines contextual and local dynamic information for mobile users, enabling them to experience a fusion of the physical, real-life environment with virtual objects.

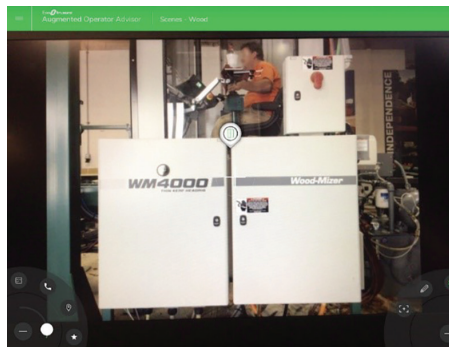


### EcoStruxure™ Architecture



### Reduce downtime

EcoStruxure Augmented Operator Advisor reduces downtime by opening electrical cabinet doors virtually and diagnosing the device status instantly in real-time without the need for lockout or electrical qualifications.



Closed electrical cabinet



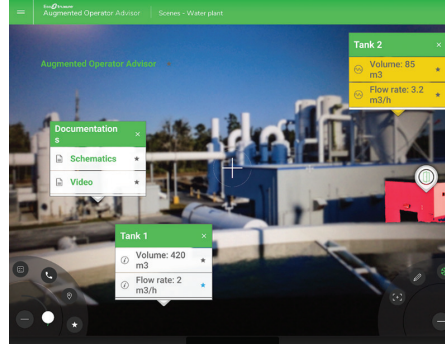
Virtually-open electrical cabinet

**+** Real-time data through augmented reality

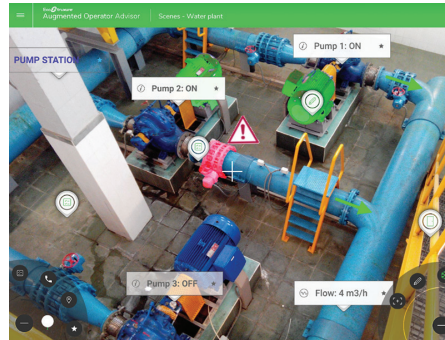


## Speed-up operation and maintenance

EcoStruxure Augmented Operator Advisor speeds up the efficiency of operations and maintenance by offering immediate access to relevant information in the field like real-time data, machine history, user manuals, instructions, diagrams, etc.



Outside the industrial site

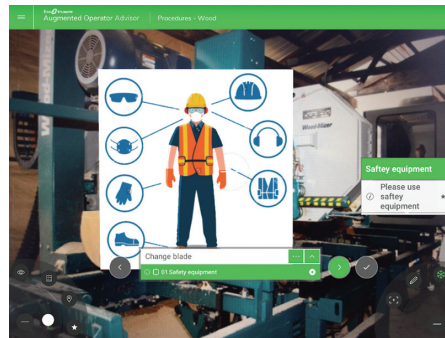


Outside the industrial site

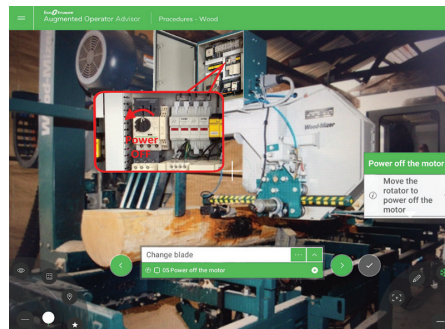


## Fewer human errors

EcoStruxure Augmented Operator Advisor enables technicians to locate the right equipment and guides them step-by-step to complete the procedures.



Standard operating procedure



Procedure augmented with images/video



[EcoStruxure Augmented Operator Advisor](#)  
[Click to view video \(1 min 10 sec\)](#)

**+** Instant diagnosis and contactless maintenance

# EcoStruxure Augmented Operator Advisor

Solution for industrial augmented reality applications



EcoStruxure Augmented Operator Advisor



EcoStruxure Augmented Operator Advisor application interface

## Presentation

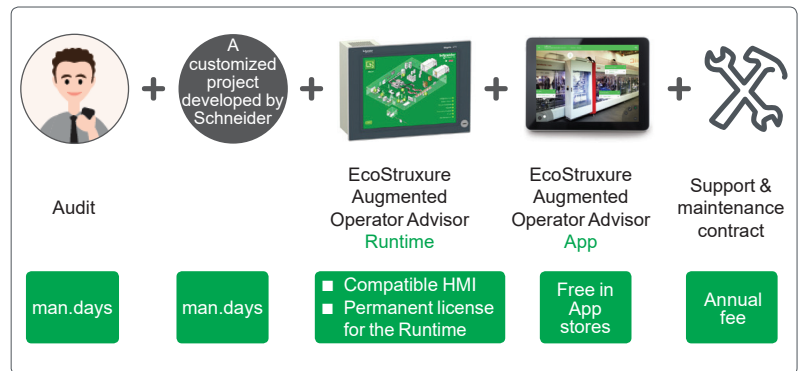
EcoStruxure Augmented Operator Advisor uses augmented reality technology to optimize the operation and maintenance of industrial sites and equipment.

It works as follows:

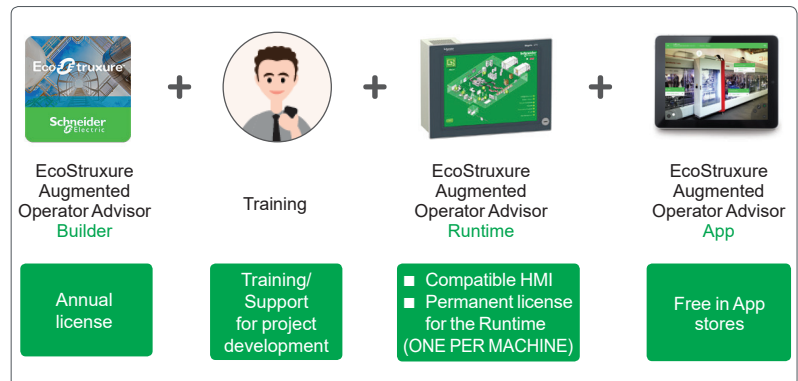
- 1 The operator points a tablet camera at the site or the monitored equipment.
- 2 The Advisor uses special image comparison techniques to match the scene visible in the field of view of the tablet camera with previously stored photographs of the same scene.
- 3 The Advisor then overlays markers called points of interest on the live scene visible on the tablet.
- 4 The operator taps the point of interest markers to display a wide variety of information like process variables, documents, Web pages, videos, etc.

EcoStruxure Augmented Operator Advisor is delivered in two business models:

- Project mode where customized projects are developed in-house and delivered to the customers end users.



- Do-it-yourself mode where projects are developed by the customers (Machine builders) themselves.

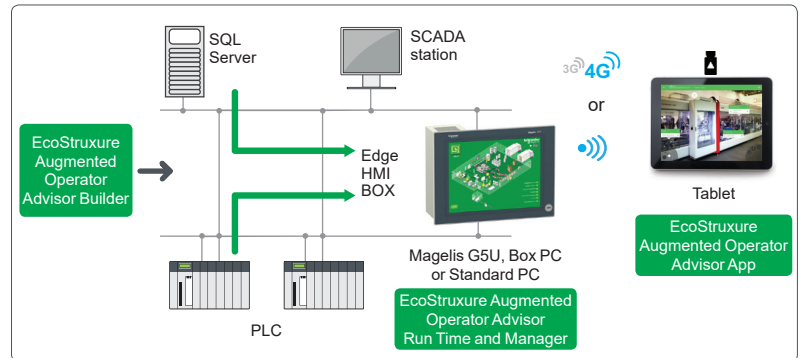


# EcoStruxure Augmented Operator Advisor

Solution for industrial augmented reality applications

## Architecture

EcoStruxure Augmented Operator Advisor is made up of the following components:



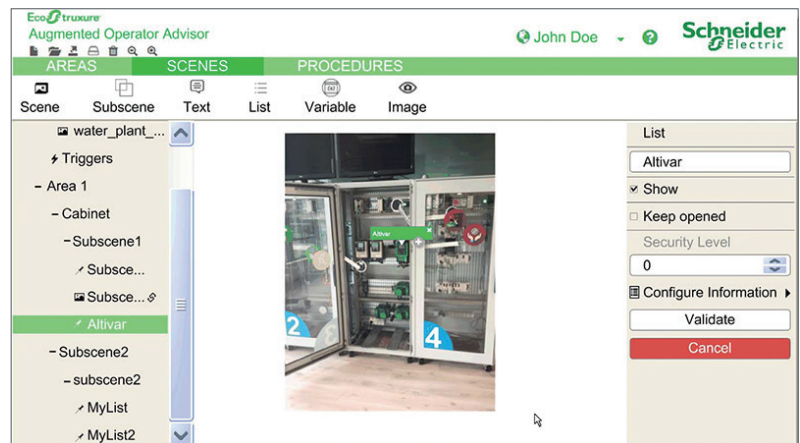
EcoStruxure Augmented Operator Advisor Architecture

### ■ EcoStruxure Augmented Operator Advisor Builder:

This is a Web-based application where the user creates projects. It is used to:

- Organize and structure the areas, scenes, subscenes, and points of interest in a project
- Create and position the points of interest on photographs
- Define what happens when the operator taps the point of interest
- Build procedures (1) to explain a set of tasks the operator must carry out

The built project must be uploaded to the device where the EcoStruxure Augmented Operator Advisor Runtime software is installed.



EcoStruxure Augmented Operator Advisor Builder

(1) Procedures are only available with particular license types.

**Note:** To view real-time values of process variables produced by the equipment being monitored, Node-RED or EcoStruxure Operator Terminal Expert applications should be installed.

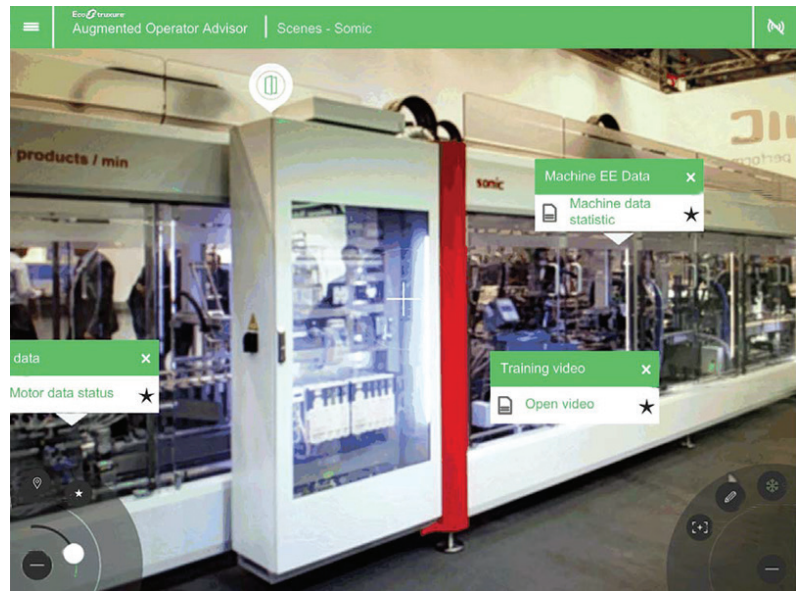


# EcoStruxure Augmented Operator Advisor

Solution for industrial augmented reality applications

## Architecture (continued)

- EcoStruxure Augmented Operator Advisor Runtime software (1):  
This is a server-based Windows software installed on a Magelis (2) or a standard Windows PC to execute the projects. It gathers together all the required information and sends it to the tablet to be displayed in the points of interest by the EcoStruxure Augmented Operator Advisor App. It also manages the database containing the photographs of scenes and equipment of the uploaded project.
- EcoStruxure Augmented Operator Advisor App (3):  
This is an application running on a tablet computer that views reality and compares it to photographs of scenes stored in the EcoStruxure Augmented Operator Advisor project. When the scene being viewed by the camera and the stored image match, the user interface controls and points of interest associated with the scene are displayed. The App is available in English, French, German, Italian, Spanish, Simplified Chinese, Japanese, and South Korean languages.



EcoStruxure Augmented Operator Advisor App

- (1) Both EcoStruxure Augmented Operator Advisor App and EcoStruxure Augmented Operator Advisor Runtime should be connected to the same WiFi network or 3G/4G mobile network to be able to communicate with each other.
- (2) Magelis HMIG5U2 Open Box PC or Magelis iPC.
- (3) Both EcoStruxure Augmented Operator Advisor App and EcoStruxure Augmented Operator Advisor Runtime should be connected to the same WiFi network or 3G/4G mobile network to be able to communicate with each other.

**Note:** To view real-time values of process variables produced by the equipment being monitored, Node-RED or EcoStruxure Operator Terminal Expert applications should be installed.

# EcoStruxure Augmented Operator Advisor

Solution for industrial augmented reality applications

## References

The EcoStruxure Augmented Operator Advisor App can be freely downloaded from the App store. The Builder and Runtime software can be downloaded from the link [EcoStruxure augmented operator advisor](#).

Also, both Builder and Runtime software are free to download and can be used for up to 42 days with no limitation on the number of areas, points of interest, and procedures. You can purchase licenses and activate the software at any time during the trial period.

## EcoStruxure Augmented Operator Advisor Builder software

Description	Paper license type	Compatible with	Reference
<b>Augmented Operator Builder Essential</b>	Single 1 year license	Magelis HMIG5U2 Open Box PC, Magelis HMIBMU, HMIBMO, HMIBSU, HMIBMP, HMIPSP	<a href="#">AOABS3CZSSXMZZ</a>
<b>Augmented Operator Builder Performance</b>	Single 1 year license	industrial PC or standard Windows PC	<a href="#">AOABM3CZMSXMZZ</a>

## EcoStruxure Augmented Operator Advisor Runtime software

Description	Paper license type	Compatible with	Reference
<b>Augmented Operator RT Essential Level 1</b> , Single-area projects and up to 20 points of interest by project	Single permanent license	Magelis HMIG5U2 Open Box PC, Magelis HMIBMU, HMIBMO, HMIBSU, HMIBMP, HMIPSP industrial PC or standard Windows PC	<a href="#">AOARS1CZSSPMZZ</a>
<b>Augmented Operator RT Essential Level 2</b> , Single-area projects and up to 50 points of interest by project	Single permanent license		<a href="#">AOARS2CZSSPMZZ</a>
<b>Augmented Operator RT Essential Level 3</b> , Single-area projects and unlimited number of points of interest by project	Single permanent license		<a href="#">AOARS3CZSSPMZZ</a>
<b>Augmented Operator RT Performance Level 1</b> , Single-area projects and up to 20 points of interest and 10 procedures by project	Single permanent license		<a href="#">AOARM1CZMSPMZZ</a>
<b>Augmented Operator RT Performance Level 2</b> , Single-area projects and up to 50 points of interest and 20 procedures per project	Single permanent license		<a href="#">AOARM2CZMSPMZZ</a>
<b>Augmented Operator RT Performance Level 3</b> , Single-area projects and unlimited number of points of interest and procedures by project	Single permanent license		<a href="#">AOARM3CZMSPMZZ</a>
<b>Augmented Operator RT Multi-Area</b> Multi-area projects and unlimited number of points of interest and procedures by project	Single permanent license		<a href="#">AOARX3CZXSPMZZ</a>



<b>A</b>	
<a href="#">AOABM3CZMSXMZZ</a>	7
<a href="#">AOABS3CZSSXMZZ</a>	7
<a href="#">AOARM1CZMSPMZZ</a>	7
<a href="#">AOARM2CZMSPMZZ</a>	7
<a href="#">AOARM3CZMSPMZZ</a>	7
<a href="#">AOARS1CZSSPMZZ</a>	7
<a href="#">AOARS2CZSSPMZZ</a>	7
<a href="#">AOARS3CZSSPMZZ</a>	7
<a href="#">AOARX3CZXSPMZZ</a>	7



[www.schneider-electric.com/ecostruxure-augmented-operator-advisor](http://www.schneider-electric.com/ecostruxure-augmented-operator-advisor)

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Design: Schneider Electric  
Photos: Schneider Electric



# EcoStruxure Control Expert and OPC software

Catalog

January 2019



EcoStruxure Control Expert  
EFB Toolkit  
Unity DIF  
Unity Loader  
EcoStruxure Control Expert Specific Libraries



OPC Factory Server



# General contents

EcoStruxure Control Expert software . . .

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OPC data server software,  
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In this catalog, each time words which refer to Safety without precision, must be understood according to "Functional Safety": IEC61508 & IEC61511.

Schneider Electric's IoT-enabled, plug-and-play, open, secure, interoperable architecture and platform, in Industries, Homes, Buildings, Data Centers and Infrastructures.

**Innovation at Every Level**

EcoStruxure is based on a three-tiered technology stack delivering Innovation at Every Level, from Connected Products to Edge Control and Apps, Analytics and Services.

This enhances our clients' value around safety, reliability, operational efficiency, sustainability, and connectivity on 6 domains of expertise:

- Power
- IT
- Building
- Machine
- Plant
- Grid

**IoT-enabled architecture and platform**

The industrial automation world is tirelessly extending its technological boundaries by innovating and proposing simple, reliable, productive and cost-efficient solutions.

The Industrial Internet of Things (IIoT) gives an additional boost to technologies. It has already started to play a vital role in industrial automation.

**Dedicated reference architectures**

We also further tailor our solutions in the form of dedicated reference architectures in building:

- Management systems
- Power systems
- Data center systems
- Industrial plant and machine systems
- Smart grid systems

**Enhanced safety**

With the release of the M580 Safety, Schneider Electric further expands the EcoStruxure platform.

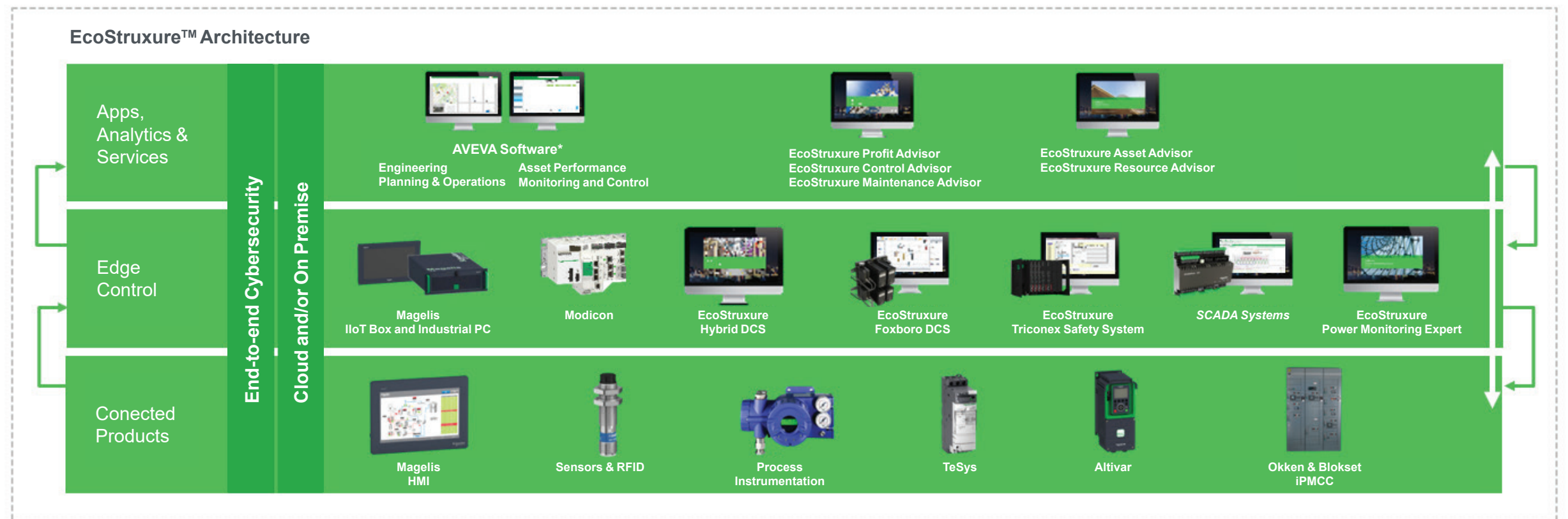
This consolidates our position as the most trusted industrial safety vendor, with thousands of Modicon and Triconex safety systems protecting the most critical industrial processes globally.

**EcoStruxure™ Plant**  
Innovation At Every Level

1 billion +  
Digital devices  
in more than  
480,000 installations

20 million +  
System integrators  
and partners  
in one ecosystem

20 billion  
Operating parameters  
are monitored  
in our installed base



\*Schneider Electric is a Strategic Technology Partner & Reseller of AVEVA





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# Software

## EcoStruxure Control Expert software

Versions ≥ V14

EcoStruxure Control Expert programming software for Modicon M340 M, Modicon M580 M5, Modicon M580 Safety M5S, Modicon Momentum MM, Premium P, Quantum Q, Quantum Safety QS and Modicon distributed I/O D platforms			
IEC 61131-3 languages	Instruction List (IL)	M - MM - D	
	Ladder (LD)	M - MM - D	
	Structured Text (ST)	M - MM - D	
	Function Block Diagram (FBD)	M - MM - D	
	Sequential Function Chart (SFC)/Grafcet	M - MM - D	
<b>Ladder Logic Language LL984</b>			
Programming services	Multitask programming (Master, fast and event-triggered)	M - MM (master task only) - D	
	Multitask programming (Master, fast, auxiliary and event-triggered)	M5	
	Functional view and function modules	M - MM - D	
	Program Units	M	
	DFB editor and instances	M - MM - D	
	DDT compound data editors	M - MM - D	
	Data structure instances and tables	M - MM - D	
	EF and EFB libraries	M - MM - D	
	User-definable control loops	P (TSXP572•/3•/4•) - D	
	Programmable control loops (with process control FB library)	M - MM - D	
	Safety function block libraries		
	Motion function block (MFB) libraries	M - MM - D	
	Hot Standby PLC redundancy system	P (TSXH5724M/44M) - D	
	System and Application diagnostics	M - MM - D	
	Bus and network configuration to slave devices (Modicon distributed I/O, etc.)	M - MM - D	
	Debugging and display services	PLC simulator	M - MM - D
		Hypertext link animations in graphic languages	M - MM - D
		Step by step execution, Breakpoint, Watchpoint	M - MM - D
		Trending tool	M - MM - D
		Operator screens, Animation tables	M - MM - D
Diagnostics viewer		M - MM - D	
Creation of hyperlinks		M - MM - D	
Other services	XML/XVM import/export	M - MM - D	
	Application converters (Modsoft, Concept, ProWORX, PL7)	M	
	Utilities for updating PACs and Advantys operating system	M - MM - D	
	Communication drivers for Modicon platforms	M - MM - D	
	Unity Pro servers - Openness (OFS, 3rd party tools)	M - MM - D	
	Online modification of the configuration		
	Online modification of the program	M - MM - Q	
	Importing of applications (Modsoft, Concept, ProWORX) written in LL984 language	M - MM	
	Data dictionary, Dynamic exchange with SCADA through OFS	M - MM - D	
	Static exchange via XML/XVM export files	M - MM - D	
	Compatible Modicon platforms	Modicon M340 CPUs M	All models
		Modicon M580 CPUs M5	BMEP5810/5820/5830/BMEH5820
Modicon M580 Safety CPUs M5S		BMEP582040S/BMEH582040S (with M580 Safety Add On CEXADSSCZZ•PMZZ)	
Modicon Momentum CPUs MM		171CBU78090/98090/98091	
Premium CPUs P		TSXP57104M/1634M/154M TSXP57204M/2634M/254M TSXP57304M/3634M/354M TSXP574634/454M TSXH5724/44M	
Quantum CPUs Q		140CPU31110, 140CPU43412U, 140CPU53414U	
Quantum Safety CPUs S	-		
Compatible Modicon distributed I/O D	STB, OTB, TM7, ETB, Momentum	STB, OTB, TM7, ETB, Momentum	

Software name	EcoStruxure Control Expert Small	EcoStruxure Control Expert Large
Unity Pro package	CEXSPUCZS•PMZZ	CEXSPUCZL•PMZZ
License, see page	1/21	1/22

EcoStruxure Control Expert programming software for Modicon M340 M, Modicon M580 M5, Modicon M580 Safety M5S, Modicon Momentum MM, Premium P, Quantum Q, Quantum Safety QS and Modicon distributed I/O D platforms			
Programming services	Multitask programming (Master, fast and event-triggered)	M - M5 - MM - P - Q - D	
	Multitask programming (Master, fast, auxiliary and event-triggered)	M - M5 - MM - P - Q - D	
	Functional view and function modules	M - M5 - MM - P - Q - D	
	Program Units	M - M5 - MM - P - Q - D	
	DFB editor and instances	M - M5 - MM - P - Q - D	
	DDT compound data editors	M - M5 - MM - P - Q - D	
	Data structure instances and tables	M - M5 - MM - P - Q - D	
	EF and EFB libraries	M - M5 - MM - P - Q - D	
	User-definable control loops	M - M5 - MM - Q	
	Programmable control loops (with process control FB library)	M - M5 - MM (master task only) - P - Q - D	
	Safety function block libraries		
	Motion function block (MFB) libraries	M5 - P (TSXP575•) - Q (140CPU651/671) - D	
	Hot Standby PLC redundancy system	M - M5 - MM - P - Q - D	
	System and Application diagnostics	M - M5	
	Bus and network configuration to slave devices (Modicon distributed I/O, etc.)	M - M5 - MM - P - Q - D	
	Debugging and display services	PLC simulator	M - M5 - MM - P - Q - D
		Hypertext link animations in graphic languages	M - M5 - MM - P - Q - D
		Step by step execution, Breakpoint, Watchpoint	M - M5 - MM - P - Q - D
		Trending tool	M - M5 - MM - P - Q - D
		Operator screens, Animation tables	M - M5 - MM - P - Q - D
Diagnostics viewer		M - M5 - MM - P - Q - D	
Creation of hyperlinks		M - M5 - MM - P - Q - D	
Other services	XML/XVM import/export	M - M5 - MM - P - Q - D	
	Application converters (Modsoft, Concept, ProWORX, PL7)	M	
	Utilities for updating PACs and Advantys operating system	M - M5 - MM - P - Q - D	
	Communication drivers for Modicon platforms	M - M5 - MM - P - Q - D	
	Unity Pro servers - Openness (OFS, 3rd party tools)	M - M5 - MM - P - Q - D	
	Online modification of the configuration		
	Online modification of the program	M5 - Q	
	Importing of applications (Modsoft, Concept, ProWORX) written in LL984 language	M - M5 - MM - P - Q	
	Data dictionary, Dynamic exchange with SCADA through OFS	M - M5 - MM - P - Q - D	
	Static exchange via XML/XVM export files	M - M5 - MM - P - Q - D	
	Compatible Modicon platforms	Modicon M340 CPUs M	All models
		Modicon M580 CPUs M5	All models
Modicon M580 Safety CPUs M5S		All models (with M580 Safety Add On CEXADSSCZZ•PMZZ)	
Modicon Momentum CPUs MM		171CBU78090/98090/98091	
Premium CPUs P		All models	
Quantum CPUs Q		All models	
Quantum Safety CPUs S	-		
Compatible Modicon distributed I/O D	STB, OTB, TM7, ETB, Momentum	STB, OTB, TM7, ETB, Momentum	

Software name	EcoStruxure Control Expert Extra Large
Unity Pro package	CEXSPUCZX•PMZZ
License, see page	1/23



1



EcoStruxure Control Expert

**UnityPro is renamed into EcoStruxure Control Expert**

In line with EcoStruxure™ strategy and values, Unity Pro, our Engineering software for the Modicon PAC platform for hybrid and process industries, is now renamed EcoStruxure™ Control Expert.

**Presentation**

This catalog describes EcoStruxure Control Expert software version 14, which is the latest version available.

EcoStruxure Control Expert is the common programming, debugging and operating software for the Modicon M340, M580, M580S, Premium, Momentum and Quantum ranges.

*Note: Please, use Unity Pro software V7 for Quantum SIL3 (safety integrity level 3).*

EcoStruxure Control Expert is multitasking software offering the following features:

- All-in-one software
- Five IEC 61131-3 programming languages
- LL 984 programming language
- Device integration with FDT/DTM standard
- Integrated, customizable DFB library
- PLC simulator on PC for program validation prior to installation
- Built-in tests and diagnostics
- Wide range of online services
- Cybersecurity

EcoStruxure Control Expert supports the new M580 Safety PACs, mixing process and safety in a single project. It allows to:

- Optimize engineering time
- Simplify programming with IEC61508 functions
- Facilitate maintenance

**Cybersecurity**

Schneider Electric constantly endeavours to maintain the security of its systems. Security guidelines are available for our customers to ensure their systems are protected from attack.

With the Modicon M340, M580, M580S, Premium, Momentum and Quantum automation platforms:

- Protection against remote programming changes via a password
- Option to enable or disable HTTP or FTP services

With the Modicon M580 automation platform:

- Log of security events in the SYSLOG database
- Extended Ethernet services management (DHCP, etc.) can be set for each user in the Access Control List
- More secure IPsec communication between EcoStruxure Control Expert or SCADA and PAC

**FDT/DTM function**

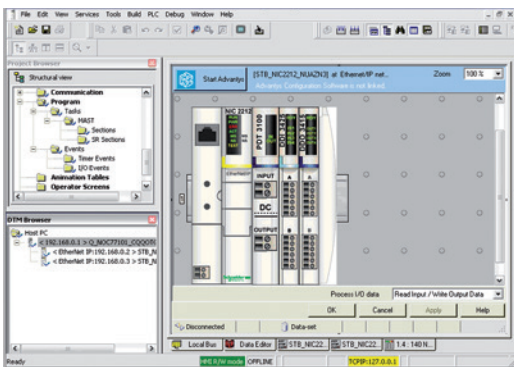
EcoStruxure Control Expert facilitates integration of fieldbus architectures into engineering control systems using FDT/DTM technology:

- FDT (*Field Device Tool*) is the container which supports the device DTMs.
- DTM (*Device Type Manager*) is the configuration tool for devices with integrated graphic interfaces. It contains the properties specific to each device.

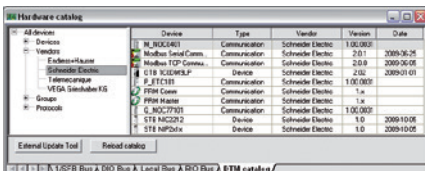
In addition to the FDT/DTM standard, Unity Pro uses specific information from the Master DTM created for the Profibus Remote Master (PRM) module, the HART module, the Premium ISPY101 weighing module, Altivar process drive integration and the Modbus/TCP and EtherNet/IP network modules BMXNOC0401 and BMENOC031.

Use of the Master DTM allows EcoStruxure Control Expert to perform the following actions:

- Manage the PAC I/O scan
- Create the application variables based on the description of the process objects available from the connected DTM devices
- Manage synchronization with the PAC configuration
- Create a generic DTM from the description files (GSD or EDS)

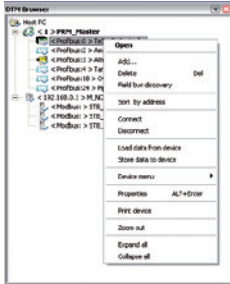


DTM editor (Modicon STB island)



DTM hardware catalog

Selection guide:  
page 1/2



DTM browser and DTM context menu

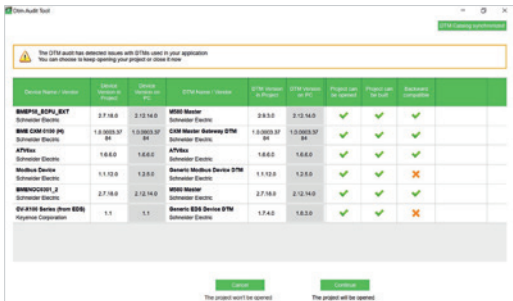
### FDT/DTM function (continued)

The DTM configuration is stored in the PAC memory so that the application can be downloaded in its entirety. It is also saved in the PAC project file (STU), the archive file (STA), and the full application exchange file (ZEF).

A third-party DTM can be installed in the DTM hardware catalog. The DTM hardware catalog can be used to sort or filter the DTM's according to various criteria such as Device, Vendor, Groups or Protocols.

The DTM Browser in EcoStruxure Control Expert:

- Displays the fieldbus topologies in a tree structure
- Allows the user to configure the DTM devices:
  - add and delete DTM's
  - connect and disconnect DTM's to/from their physical devices
  - display and print the properties of a DTM
  - transfer DTM configuration data to and from the physical device
  - functions specific to the DTM, via the Device menu



DTM Audit Tool screen

The fieldbus discovery function scans the physical devices in a fieldbus network and adds the selected devices to the DTM Browser.

DTM Audit Tool is provided to have a clear vision of the DTM versions embedded in a project and the versions installed on the PC. Depending on the DTM versions compatibility, the tool informs if the project can be opened and built.

### Programming languages

#### The five IEC 61131-3 compliant languages

The five graphical or textual languages available in EcoStruxure Control Expert are used for programming Modicon M340, Modicon M580, Modicon M580 Safety, Modicon Momentum, Premium and Quantum automation platforms.

The three graphical languages are:

- Ladder (LD) language
- Function Block Diagram (FBD)
- Sequential Function Chart (SFC) or Grafcet

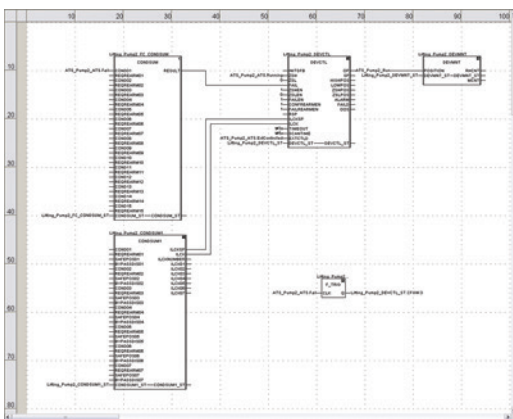
The two textual languages are:

- Structured Text (ST)
- Instruction List (IL)

For these five languages, you can use the standard set of instructions compliant with IEC standard 61131-3 to create applications which can be transferred from one platform to another. EcoStruxure Control Expert software also provides extensions to this standard set of instructions. As they are specific to Modicon M340, Modicon M580, Modicon M580 Safety, Modicon Momentum, Premium and Quantum automation platforms, these extensions support the development of more complex applications in order to maximize the potential of the specific features of each of these platforms.

#### LL984 language

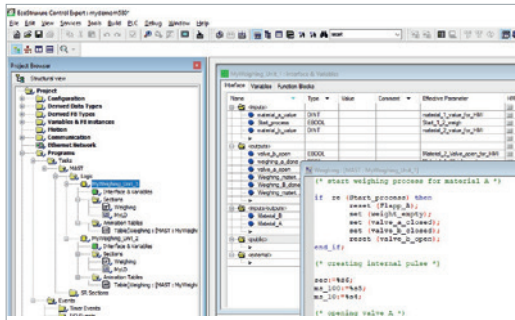
LL984 (Ladder Logic 984) language enables migration from legacy Modicon ranges. It is used to program Modicon M580, Modicon M580 Safety, Modicon M340, Momentum and Quantum automation platforms.



FBD language editor



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Program units

### Program units

Program Units are compliant with Program Organization Units (POUs) as defined in IEC1131-3 standard.

Program Units are autonomous programming entities (only available for Modicon M580 and M340). Program Units allows easy duplication and clear organization of program with local and public variables.

The Program Unit includes:

- Public and local variables
- Sections
- Animation tables

The following programming languages are supported:

- FBD (Function Block Diagram)
- LD (Ladder Diagram Language)
- SFC (Sequential Function Chart) only for sections in Program Unit that belongs to the MAST task
- IL (Instruction List)
- ST (Structured Text)

### Common Safety on Modicon M580 (1)

#### Presentation

EcoStruxure Control Expert user-friendly interface for Modicon automation platforms family is now available for safety.

EcoStruxure Control Expert allows to:

- Manage a complete control and safety automation system from design to operation and maintenance.
- Increase productivity during engineering, commissioning and operation for both process and safety, reducing time to market.

EcoStruxure Control Expert makes it possible to design a common safety architecture by executing:

- Safety functions of your process in specific safety tasks,
- Standard functions in other tasks.

All X80 safety I/O are managed through safety tasks, and standard and non interfering X80 modules are managed in other tasks. So the mix of safety and standard X80 modules is possible in the same M580 Safety PAC.

#### IEC 61131-3 compliant languages

FBD and LD are supported in SAFE task.

2 modes for operation and maintenance of SAFE task:

- Safety mode: in operation conditions, the safe task is running and is locked for users.
- Maintenance mode: dedicated for maintenance operation in safety part of the application.

#### Data editor

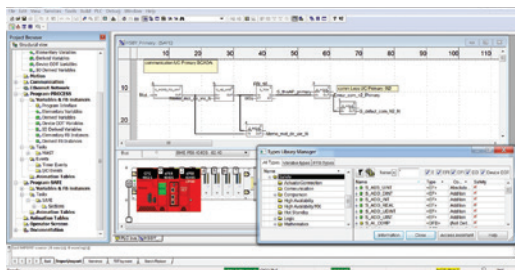
Process and safe data are managed in distinct M580 memory area. EcoStruxure Control Expert allows to easily manage:

- Exchange of data between process and safe areas of the project in "Data Editor"
- Process data in "Process Data Editor"
- Safe data in "Safe Data Editor"

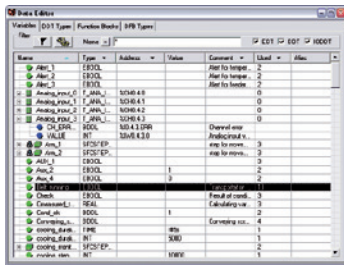
#### Safety function blocks

EcoStruxure Control Expert supports new M580 Safety offers with IEC61508 programming languages and rich library of Safety Function blocks.

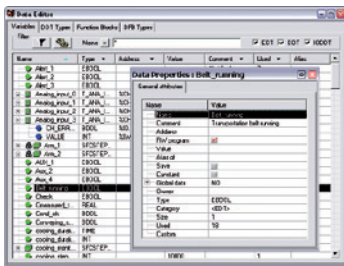
(1) Available from V13



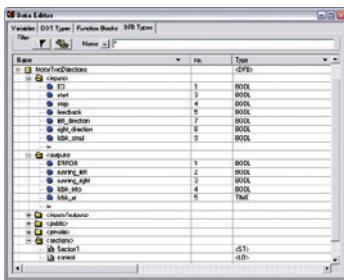
Safety function block



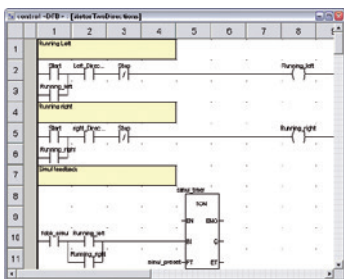
Data editor



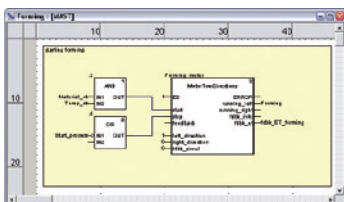
Data properties



Design



Creating the code



Use within the program

### Data editor

The data editor provides a single tool for performing the following editing tasks:

- Declaration of data including variables and function blocks (declaration of their type, instances and attributes)
- Use and archiving of function block data types in different libraries
- Hierarchical view of data structures
- Searching, sorting and filtering of data
- Creation of a hyperlink to access a description from any variable comment

The data is displayed in four tabs:

- “Variables” tab for the creation and management of the following data instances: bits, words, double words, inputs/outputs, tables and structures
- “DDT Types” tab for the creation of derived data types (tables and structures)
- “Function Blocks” tab for the declaration of EFBs and DFBs
- “DFB Types” tab for the creation of DFB user function block data types

Each data element has several attributes, of which:

- Variable name and type are mandatory
- Comment, physical address in the memory and initial values are optional

The data editor columns can be configured (number of columns, order). The attributes associated with a variable can be displayed in a properties window.

This editor can be accessed at any time during programming by selecting variables for data modification or creation.

### DFB user function blocks

With EcoStruxure Control Expert software, users can create their own function blocks for specific application requirements on Modicon M340, Modicon M580, Modicon M580 Safety, Modicon Momentum, Premium and Quantum platforms.

Once created and saved in the library, these user function blocks can be reused as easily as EFBs (Elementary Function Blocks).

The user function blocks can be used to structure an application. They are used when a program sequence is repeated several times in the application or for freezing a standard programming routine. They can be read-only or read/write. They can be exported to the other EcoStruxure Control Expert applications.

Using a DFB in one or more applications:

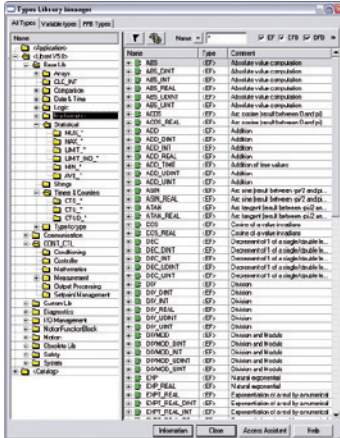
- simplifies program design and entry
- improves program readability and understanding
- facilitates program debugging (variables handled by the DFB are identified in the data editor)
- enables the use of private variables specific to the DFBs, which are independent of the application

A DFB is set up in several stages:

- The DFB is designed by assigning a name, a set of parameters (inputs, outputs, public and private internal variables) and a comment to it via the data editor.
- The code is created in one or more sections of the program, with the following languages selected according to requirements: Structured Text, Instruction List, Ladder or Function Block Diagram (ST, IL, LD or FBD).
- The DFB can be stored in a library with an associated version number.
- A DFB instance is created in the data editor or when the function is called in the program editor.
- This instance is used in the program in the same way as an EFB (the instance can be created from within the program).



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Standard function block libraries

### Function block libraries

The function and function block libraries manager contains the elements provided with EcoStruxure Control Expert software. Functions and function blocks are organized into libraries, which themselves consist of families. Depending on the type of PAC selected and the processor model, users will have a subset of these libraries available to write their applications. However, the “Base Lib” library contains a set of functions and function blocks, for the majority of which compatibility is independent of the platforms. In particular, it contains the blocks compliant with IEC 61131-3. The “Base Lib” library is structured into families:

- Timers and counters
- Process control on integers
- Table management
- Comparison
- Date and time management
- Logic processing
- Mathematical processing
- Statistical processing
- Character string processing
- Type-to-type data conversion

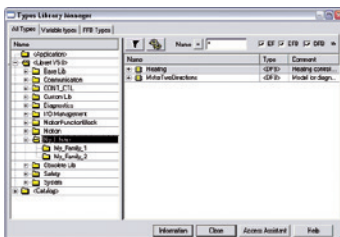
The “Base Lib” library, which covers standard automation functions, is supplemented by other, more application-specific libraries and platform-specific functions:

- **Communication library**, providing an easy means of integrating communication programs from PACs with those used by HMI from the PAC application program. Like other function blocks, these EFBs can be used in any language to exchange data between PACs or to deliver data to be displayed on an HMI.
- **Process control library**. The CONT\_CTL library can be used to set up process-specific control loops. It offers controller, derivative and integral control functions and additional algorithms, such as EFBs for calculating mean values, selecting a maximum value, detecting edges or assigning a hysteresis to process values, etc.
- **Diagnostics library**, which can be used to monitor actuators and contains EFBs for active diagnostics, reactive diagnostics, interlocking diagnostics, permanent process condition diagnostics, dynamic diagnostics, monitoring of signal groups, etc.
- **I/O management library**, providing services to handle information exchanged with hardware modules (formatting data, scaling, etc.).
- **Motion Function Blocks library**, containing a set of predefined functions and structures to manage motion controlled by drives and servo drives connected on CANopen.
- **Motion library** for motion control and fast counting.
- **System library**, which provides EFBs for the execution of system functions, including: evaluation of scan time, availability of several different system clocks, SFC section monitoring, display of system status, management of files on the memory cartridge of the Modicon M340 processor, M580 processor, etc.
- Finally, a library named “obsolete”, containing the function blocks used by legacy programming software needed to perform application conversions.

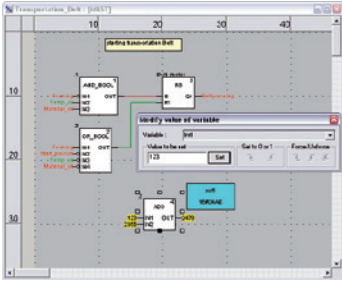
### Management of user standards

Users can create libraries and families in order to store their own DFBs and DDTs. This enhancement allows users to take advantage of programming standards adapted to their needs, along with version management. This means that it is possible to:

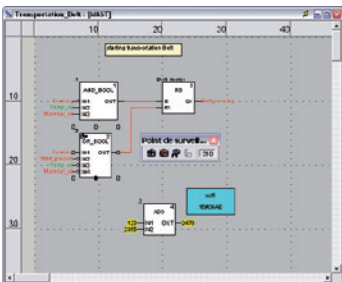
- Check the version of the elements used in an application program against those stored in the library
- Perform an upgrade, if necessary



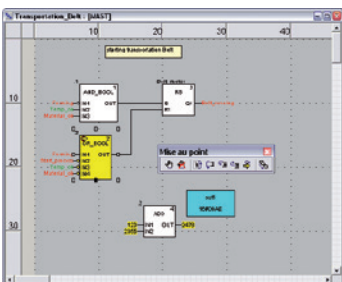
User libraries



Debugging tools: Dynamic animation/adjustment



Debugging tools: Watchpoint



Debugging tools: Breakpoint/step-by-step

### Debugging tools

EcoStruxure Control Expert software offers a complete set of tools for debugging Modicon M340, M580, M580S, Momentum, Premium or Quantum applications. A tool palette provides direct access to the main functions:

- Dynamic program animation.
- Setting of watchpoints or breakpoints (not authorized in event-triggered tasks).
- Step-by-step program execution. A function in this mode enables section-by-section execution. Instruction-by-instruction execution can be launched from the previous breakpoint. Three execution commands are therefore possible when the element to be processed is a subroutine (SR) or DFB user block instance:
  - Step Into: this command is used to move to the first element of the SR or DFB
  - Step Over: this command is used to execute the entire SR or DFB
  - Step Out: this command is used to move to the next instruction after the SR or DFB element
- Independent execution of the master (MAST), fast (FAST), auxiliary (AUX) and event-triggered (EVTi) tasks.

### Animation of program elements

Dynamic animation is managed section-by-section. A button on the toolbar is used to activate or deactivate animation for each section.

When the PAC is in RUN, this mode can be used to view simultaneously:

- The animation of a program section, regardless of the language used.
- The variables window containing the application objects created automatically from the section viewed.

### Animation table

Tables containing the variables of the application to be monitored or modified can be created by data entry or initialized automatically from the selected program section. The tables can be stored in the application and retrieved from there at a later date.

EcoStruxure Control Expert can be used to save, import and export Animation tables with predefined set values. As it allows population of set values along with current values and vice versa in the PAC, the Animation tables can be used as templates to make the application easier to tune.

### Debugging DFB user function blocks

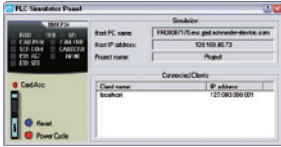
The parameters and public variables of these blocks are displayed and animated in real time using animation tables, with the possibility of modifying and forcing the required objects.

In exactly the same way as with other program elements, the watchpoint, breakpoint, step-by-step execution and program code diagnostics functions can be used to analyze the behavior of DFBs. Setting a breakpoint in a DFB user function block instance stops execution of the task containing this block.

### Debugging in Sequential Function Chart (SFC) language

The various debugging tools are also available in SFC language. However, unlike other sections (IL, ST, LD or FBD), an SFC section executed step-by-step does not stop execution of the task but instead freezes the SFC chart. Several breakpoints can be declared simultaneously within a single SFC section.

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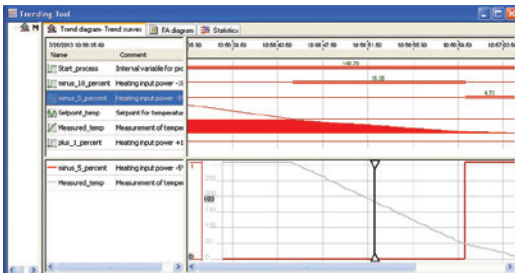
Simulator control panel

### PLC simulator

EcoStruxure Control Expert 's integrated simulator can be used to test the application program for Modicon M340, M580, M580S, Momentum, Premium or Quantum automation platforms from the PC terminal without having to connect to the processor. The functions provided by the debugging tools are available for debugging the master, fast and auxiliary tasks.

As the simulator does not manage the PLC I/O, animation tables can be used to simulate the state of inputs by forcing them to 0 or 1.

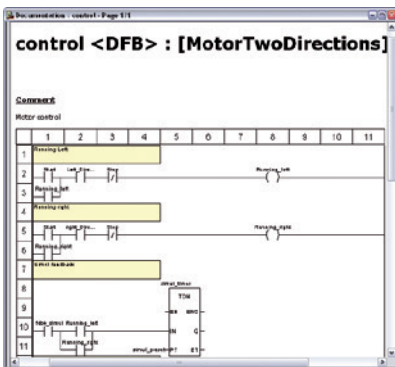
The simulator can be connected to third-party applications via an OPC server with OFS (OPC Factory Server) software.



Trending tool control panel

### Trending tool

The trending tool allows easy monitoring of variables by detecting operating problems or improving process performance. You can select any variable in your application and start acquisition, save records, and analyze records with integrated tools or Excel. The PAC mast scan can scan up to 16 variables.



Accessing the documentation editor

### Documentation editor

The documentation editor is based on the Documentation Browser, which shows the file structure in tree form.

It allows all or part of the application file to be printed on any graphics printer accessible under Windows and using True Type technology, in A4 or US letter print format.

The documentation editor supports the creation of user-specific files using the following headings:

- Title page
- Contents
- General information
- Footer
- Configuration
- EF, EFB and DFB type function blocks
- User variables
- Communication
- Project structure
- Program
- Animation tables and cross-references
- Runtime screens

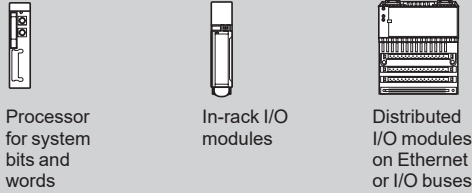
### System Time stamping

System Mode allows Time Stamping of I/O or internal variables for easy management via OFS and SCADA. Programming or use of any function block is not required as the configuration is easy to perform in EcoStruxure Control Expert Data Editor supported by OFS version 3.51.

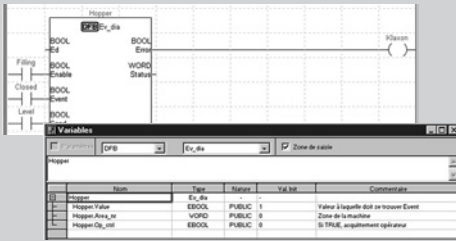
## Diagnostics integrated in Modicon M340, Modicon M580, Modicon M580 Safety, Premium and Quantum automation platforms

### Presentation

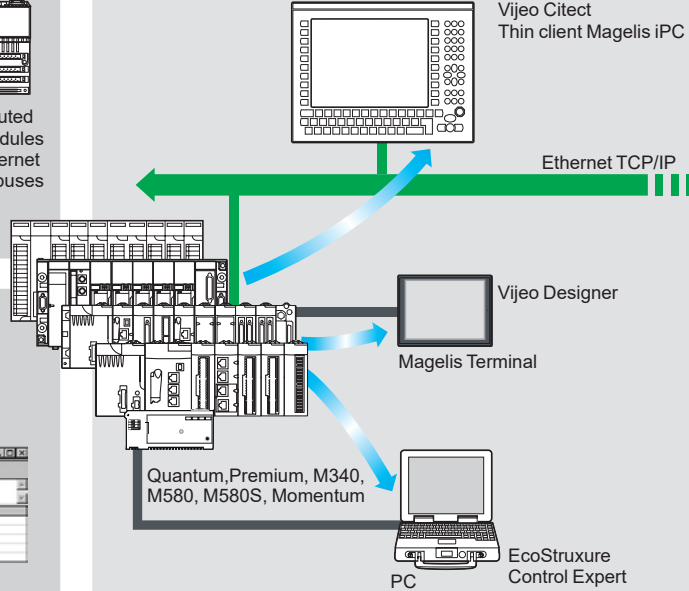
#### System diagnostics



#### Application diagnostics



#### Diagnostics viewers



Higher-level M.E.S.

Cell level

Machine level

The diagnostics offer for Modicon M340, M580, M580S, Momentum, Premium and Quantum platforms is based on the following three components:

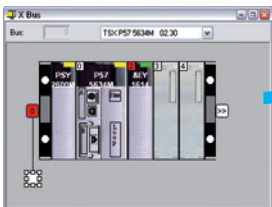
- System diagnostics
- DFB and EFB diagnostic function blocks (for system and application diagnostics)
- Error message display system, called viewers, supplied as a standard component of Magelis terminal, Vijeo Citect supervisory software and EcoStruxure Control Expert setup software

### System diagnostics

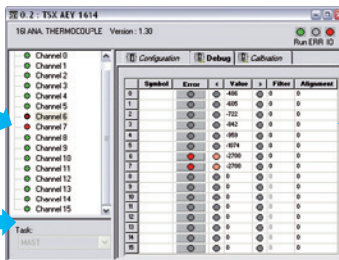
The system diagnostics for the Modicon M340, M580, M580S, Momentum, Premium and Quantum platforms support the monitoring of system bits/words, I/O modules and activity times (minimum/maximum) of SFC steps. By simply choosing the relevant option during application configuration, any event will generate time-stamped messages logged in the diagnostic buffer of the PAC.

These events are displayed automatically in a diagnostics viewer (1) without requiring any additional programming.

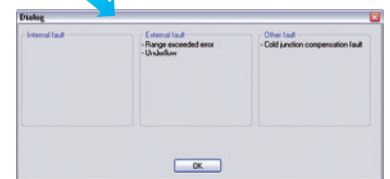
With EcoStruxure Control Expert integrated diagnostics, this function can be used to perform first-level diagnostics of the elements in the configuration, up to and including each I/O module channel.



Configuration level



Module level



Channel level



Viewer window (example with EcoStruxure Control Expert software)

(1) Diagnostics viewers are tools for displaying and acknowledging diagnostic error messages. They are supplied as a standard component of EcoStruxure Control Expert and Vijeo Designer software, with Magelis terminals and with the PLC Web server that can be accessed via a thin client Magelis iPC.

### Modifying the program with the PAC in RUN mode

With EcoStruxure Control Expert , changes can be made to the program when the PAC connected to the programming terminal is in RUN mode. These modifications are performed with the following operations:

- The application contained in the PAC is transferred to the PC terminal running EcoStruxure Control Expert , if necessary.
- Program changes are prepared. These program modifications can be of any type and in any language (IL, ST, LD, FBD and SFC), for example, addition or deletion of SFC steps or actions. The code of a DFB user function block can also be modified (however, modification of its interface is not permitted).
- These program changes are updated in the PAC (in RUN mode).

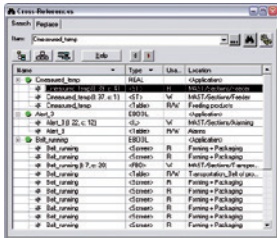
This function makes it possible to add or modify program code and data in different parts of the application during a single modification session (thus resulting in a uniform, consistent modification with respect to the controlled process). This increased flexibility comes at a cost in terms of the amount of program memory required.

### Cross-references function

EcoStruxure Control Expert 's cross-references function, which is available in standalone mode (offline) and when connected to the PAC in Run (online), allows users to view the elements of a PAC application when searching for any type of variable. This view indicates where the declared variable is used, as well as how it is used (for writing, reading, etc.).

This function also provides access to the Search/Replace function for variable names.

The variable search can be initialized from any editor (language, data, runtime screen, animation table, etc.).



Cross-references table

### Import/export function

The import/export function available in EcoStruxure Control Expert supports the following operations from the structural and functional project views:

- Via the import function, reuse of all or part of a previously created project in the current project.
- Via the export function, copying of all or part of the current project to a file for subsequent reuse.

The files generated during export are generally in XML format (1). However, in addition to XML, variables can be exported and imported in the following formats:

- .xvm format compatible with OFS data server software
- source format, in an .scy file compatible with PL7 development software
- text format with separator (TAB) in a .txt file for compatibility with any other system

During an import, a wizard can be used to reassign data to new instances of:

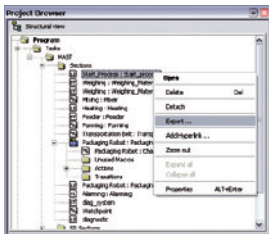
- DFB function blocks
- DDT data structures
- simple data

In addition, when a functional module is imported, the data associated with animation tables and runtime screens is also reassigned.

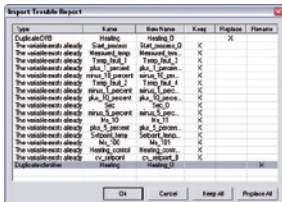
The XML import function also supports the transfer of a Modicon M340, Modicon M580, Modicon M580 Safety, Premium or Quantum PAC configuration prepared in the SIS Pro costing and configuration tool for use in the creation of a project in EcoStruxure Control Expert . This import function spares the user from having to redefine the PAC configuration when the PAC has already been configured with the SIS Pro tool.

EcoStruxure Control Expert includes an Excel import/export tool that makes it easy to manage the variables using an XML export file in Excel.

(1) XML language is an open, text-based language that provides structural and semantic information.



Data export shortcut menu



Data import wizard



### Application converters

EcoStruxure Control Expert 's integrated conversion tools can be used to convert applications created with ModSoft, ProWorX, Concept and PL7 programming software to EcoStruxure Control Expert applications.

#### Concept/EcoStruxure Control Expert converter (Quantum and Momentum PACs)

This conversion is performed with a Concept application V2.5 or later (it can also be performed in V2.11 or later, but only after an update to V2.5). In order to perform the conversion, the application should be exported to an ASCII file in Concept. The export file is converted to a EcoStruxure Control Expert source file automatically. This file is then analyzed by EcoStruxure Control Expert . At the end of the procedure, a conversion report is generated and an output window displays any conversion detected error and provides direct access to the part of the program to be modified.

The Concept application converter converts the application to EcoStruxure Control Expert , but does not guarantee that it will operate correctly in real time. It is therefore essential to test or debug all converted applications.

#### PL7/EcoStruxure Control Expert converter (Premium PAC and Atrium slot PAC)

This conversion is performed with a PL7 application V4 or later (Premium PAC or Atrium slot PAC). In order to perform the conversion, the source file (complete application or user function block) should be exported to PL7. The conversion procedure is similar to that of the Concept conversion described above.

**Note:** Applications created with Concept, Modsoft and ProWORX can be converted to LL984. Please contact our Customer Care Center

#### Unity M580 Application Converter (UMAC)

The conversion from Unity Quantum and Unity Premium applications to Unity M580 applications is performed with UMAC.

UMAC is a standalone software tool that can be installed on a Windows PC.

The complete conversion process relies on the use of EcoStruxure Control Expert . UMAC is available in 2 sizes: Lite and Standard. UMAC Lite is free and downloadable from our website [www.schneider-electric.com](http://www.schneider-electric.com). UMAC Lite allows to retain the existing configuration while UMAC Standard adapts the code to Modicon M580.



Unity M580 Application Converter tool

### Operating system update utilities

The OS-Loader software is designed for updating operating systems on Premium and Quantum platforms. It is supplied with EcoStruxure Control Expert software.

It is used to upgrade EcoStruxure Control Expert processors and modules as well as to upgrade PL7 or Concept processors and modules to make them compatible with EcoStruxure Control Expert .

OS-Loader software supports:

- Premium processors
- Quantum processors
- Ethernet communication modules
- EtherNet/IP communication modules

The operating system updates are performed as follows:

- Uni-Telway RS 485 terminal link for Premium processors
- Modbus or Modbus Plus terminal link for Quantum processors
- Ethernet TCP/IP network for integrated Ethernet port on Premium processors and Premium and Quantum Ethernet modules

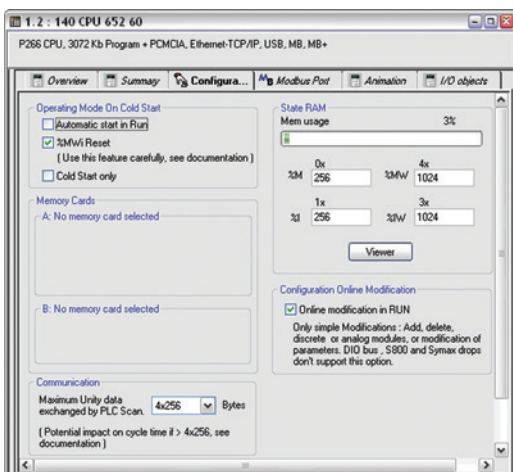
**Note:** For Modicon M340, M580 and Momentum this service is provided by Unity Loader (see page 2/6).

### Online modification of the configuration (CCOTF)

This function, also called *Change Configuration On The Fly (CCOTF)*, is used to modify the Modicon M580 or Modicon Quantum configuration online (application in RUN mode):

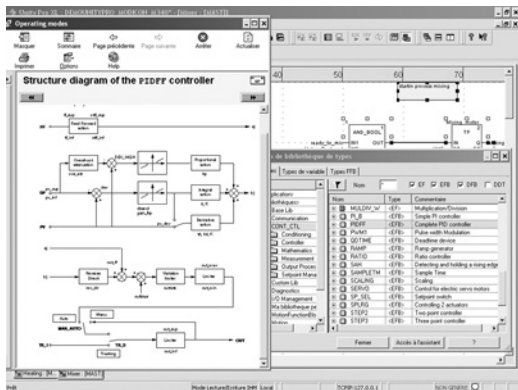
- Addition or removal of discrete or analog I/O modules
- Modification of configuration parameters of discrete or analog I/O modules (already present or newly installed)

On Quantum, the CCOTF function is supported by standalone processors for the three types of I/O architecture (local, RIO, DIO) using version 5 of EcoStruxure Control Expert , and for Hot Standby processors using version 4.1 or higher of EcoStruxure Control Expert . The CCOTF function should first be validated in the EcoStruxure Control Expert configuration screen. A confirmation screen appears when the configuration has been modified online.



Configuration screen

1



CONT\_CTL, programmable process control integrated in Unity Pro

### Process control in machines

EcoStruxure Control Expert contains **CONT\_CTL**, a library of 36 function blocks used to create control loops for machine control.

The requirements for closed loop control functions in machines are adequately met by Modicon M340, Modicon M580, Modicon M580 Safety, Modicon Momentum, Premium and Quantum platforms thanks to the wealth of functions in the library and the flexibility with which function blocks can be linked together through programming. This solution therefore avoids the need for external controllers and simplifies the overall control architecture of the machine, as well as its design, roll-out and operation.

The EFs or EFBs can be used in any of the EcoStruxure Control Expert languages (LD, ST, IL and FBD). FBD is particularly suitable for accessing control processing operations in EcoStruxure Control Expert through its wizard for entering and viewing parameters and function block variables.

### CONT\_CTL library functions

The library consists of six function families:

- input data conditioning
- controllers
- mathematical functions
- process value processing
- output value processing
- setpoint management

#### Input data conditioning

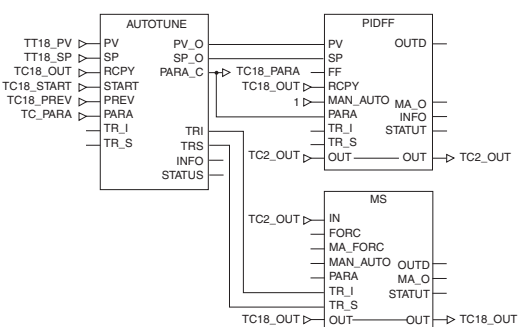
DTIME	Pure time delay
INTEGRATOR	Integrator with limiting
LAG_FILTER	First order time lag
LDLG	Lead/lag function with smoothing
LEAD	Lead function with smoothing
MFLOW	Mass flow calculation based on the measurement of differential pressure or flow speed with pressure and temperature compensation
QDTIME	Dead time term
SCALING	Scaling
TOTALIZER	Integrator (typically of flow) until a limit (typically a volume) is reached, with automatic reset
VEL_LIM	Velocity limiter, with manipulated variable limiting

#### Controllers

PI_B	Basic PI controller: PI algorithm with a mixed structure (series/parallel)
PIDFF	Complete PID controller: PID algorithm with a parallel or mixed structure (series/parallel)
AUTOTUNE	Automatic tuner setting for the PIDFF (complete PID) controller or the PI_B (simple PI) controller <ul style="list-style-type: none"> <li>□ Identification using Ziegler Nichols type method</li> <li>□ Modeling based on first-order process</li> <li>□ Building of control parameters with criterion for prioritizing either the reaction time to disturbance (dynamic) or the stability of the process</li> </ul>
IMC	Model-based controller. The model is a first-order model with delay. This corrector is useful: <ul style="list-style-type: none"> <li>□ When there are serious delays compared with the main time constant of the process; this scenario cannot be satisfactorily resolved by standard PID process control.</li> <li>□ For regulating a non-linear process IMC can handle any stable aperiodic process of any order.</li> </ul>
SAMPLETM	Control of controller startup and sampling
STEP2	Simple two-position controller
STEP3	Three-position controller for temperature regulation

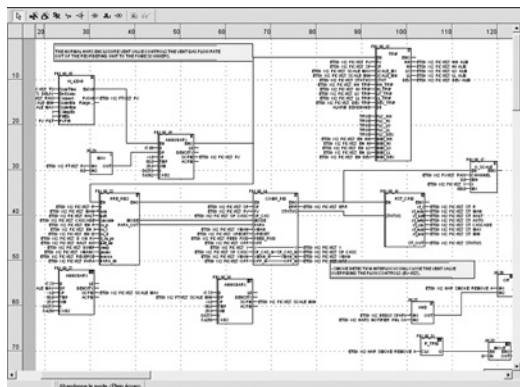
#### Mathematical functions

COMP_DB	Comparison of two values, with dead zone and hysteresis
K_SQRT	Square root, with weighting and threshold, useful for linearization of flow measurements
MULDIV_W	Weighted multiplication/division of 3 numerical values
SUM_W	Weighted summing of 3 numerical values

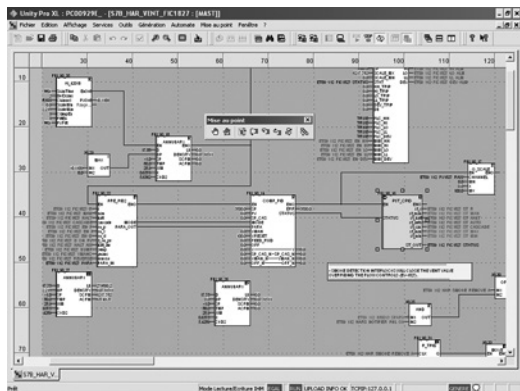


Example: PID controller with MS manual control





Programming in EcoStruxure Control Expert in offline mode



Programming in online mode

### Process control in machines (continued)

#### CONT\_CTL library functions (continued)

##### Process value processing

AVGMV	Moving average with fixed number of samples (50 max.)
AVGMV_K	Moving average with constant correction factor, 10,000 samples max.
DEAD_ZONE	Dead zone
LOOKUP_TABLE1	Linearization of characteristic curves using first-order interpolation
SAH	Detection of a rising edge
HYST_XXX	Detection of high threshold with hysteresis (1)
INDLIM_XXX	Detection of high and low thresholds with hysteresis (1)

##### Output value processing

MS	Manual control of an output
MS_DB	Manual control of an output with dead zone
PWM1	Control via pulse width modulation
SERVO	Control for servo motors
SPLRG	Control of two <i>Split Range</i> actuators

##### Setpoint management

RAMP	Ramp generator, with separate ascending and descending ramps
RATIO	Ratio controller
SP_SEL	Selection of setpoint value: local (operator) or <i>remote</i> (processing)

#### Setting up process control function blocks

Based on the sequencing of function blocks, the FBD language integrated in EcoStruxure Control Expert is a programming language particularly suitable for building control loops.

Designers can use FBD to easily associate blocks from the CONT\_CTL library with their own DFBs written in EcoStruxure Control Expert's ST, IL or LD language, or in C language.

#### Debugging, operation

All EcoStruxure Control Expert's standard debugging services (see page 1/11) are available. In particular, the PLC simulator can be used to check correct execution of processing offline.

#### Compatibility

The CONT\_CTL control function block library is available in all versions of EcoStruxure Control Expert. It is compatible with processors in the Modicon M340, Modicon M580, Modicon M580 Safety, Modicon Momentum, Premium and Quantum ranges.

#### Optional specialized libraries

The CONT\_CTL control function block library can be supplemented with optional specialized libraries, to meet specific needs such as predictive control, fuzzy logic controller, HVAC and mass flow calculation (see page 2/8).

#### Resources

The technical documentation provides many examples of how to set up programmable process control function blocks in FBD, LD, IL and ST languages.

The techniques for adjusting process control loops are described in the document "Process control, Unity V3.0" available online at [www.schneider-electric.com](http://www.schneider-electric.com).

(1) XXX according to the type of variable: DINT, INT, UINT, UDINT, REAL.

# Software

## EcoStruxure Control Expert software Small/Large/Extra Large/Extra Large with M580 Safety

1

### Communication drivers

The most commonly used communication drivers for Modicon M340, M580, M580S, Momentum, Premium and Quantum platforms are installed at the same time as the EcoStruxure Control Expert software.

EcoStruxure Control Expert also includes the following drivers, which can be installed as required (1):

Protocol - Hardware	Windows® 7 32-bit and 64-bit editions	Windows® 10 32-bit and 64-bit editions
Fip adaptor - CUSBFIP		
Modbus Serial - COM port		
PCIway - Atrium TPCI57 PCI card		
Uni-Telway - COM port		
USB for high end PLC		
XIP - XWay on TCP/IP		

Driver available     Driver not available

### Upgrade kits for Concept, PL7 Pro and ProWORX software

The Concept, PL7 Pro and ProWORX upgrade kits allow users who already have one of these programs from the installed base, and who have a current subscription, to obtain EcoStruxure Control Expert version V4.1 software at a reduced price.

These upgrades are only available for licenses of the same type (e.g. from Concept XL group license to EcoStruxure Control Expert Extra Large group license).

### Composition and Windows® OS compatibility

EcoStruxure Control Expert multilingual software packages are compatible with Windows 7 Professional (32-bit and 64-bit), Windows 10 (32-bit and 64-bit) and Windows Server 2016 operating systems. On 64-bit Windows 7, the installation of Service Pack 1 (SP1) is mandatory in order to use EcoStruxure Control Expert V14 / Unity Pro V13.

A 64-bit Windows operating system with 4 GB RAM minimum is mandatory in order to manage projects with Modicon M580 controller and projects using DTMs.

**Note:** EcoStruxure Control Expert requires .NET Framework 3.5 and .NET Framework 4.5.2.

They include:

- Documentation in electronic format in six languages (English, French, German, Italian, Spanish and Chinese)
- Converters for converting applications created with Concept, PL7 and Unity M580 application converter (UMAC) programming software
- PLC simulator

Cables for connecting the processor to the programming PC need to be ordered separately.

(1) Also available separately under reference **TLXCDDR20M**.

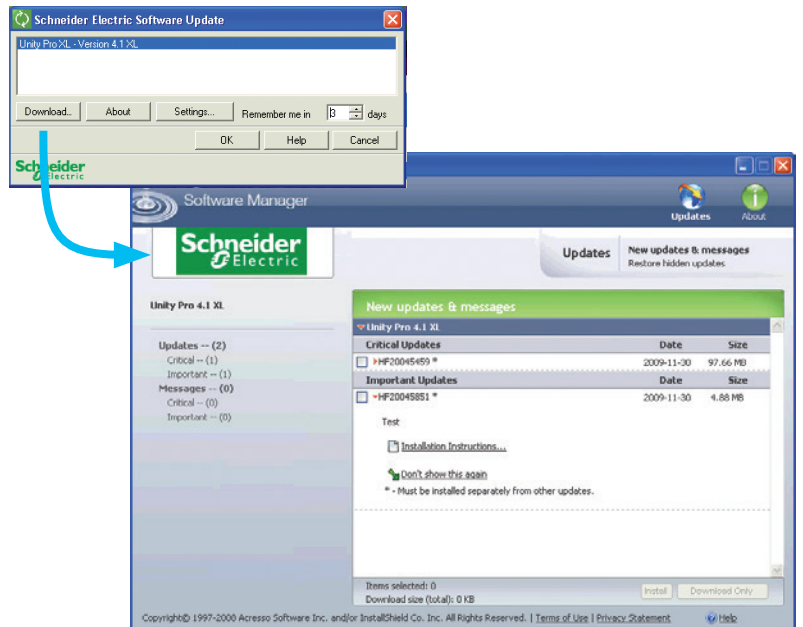
# Software

## EcoStruxure Control Expert software Small/Large/Extra Large/Extra Large with M580 Safety

1

### EcoStruxure Control Expert update

Customers are notified automatically when a new EcoStruxure Control Expert update becomes available. They can then access the software update manager directly, download the update and install it locally on their workstation.



**Note:** The latest firmware versions can be downloaded from our website [www.schneider-electric.com](http://www.schneider-electric.com).

# Software

## EcoStruxure Control Expert software Small/Large/Extra Large/Extra Large Safety

1



EcoStruxure Control Expert

### What is new in EcoStruxure Control Expert versus Unity Pro

#### Package and licenses can be ordered separately

License is mandatory to run EcoStruxure Control Expert (after expiration of Trial Period), while DVD package is optional: installation files can be downloaded from Schneider-Electric.com.

Licenses are printed and delivered separately.

#### Package is unique

Package is now unique for all sizes (Small, Large, Extra Large and Safety).

Licenses are available in different sizes:

- EcoStruxure Control Expert Small (see page 1/21)
- EcoStruxure Control Expert Large (see page 1/22)
- EcoStruxure Control Expert Extra Large (see page 1/23)
- EcoStruxure Control Expert Extra Large Safety (see page 1/24)

#### New Floating Licenses are available

In addition to usual licenses that are linked to the computer where Control Expert is running (so-called Node Locked licenses), new Floating Licenses are available.

#### Unity Pro XLS becomes EcoStruxure Control Expert with M580 Safety

M580 Safety can now be managed in different ways:

- With an Add-on license that can be added to a XL or L license (see page 1/24); or
- Directly with a bundle license (EcoStruxure Control Expert XL with M580 Safety). (see page 1/24)

### Composition and Windows OS compatibility

EcoStruxure Control Expert multilingual software packages are compatible with Windows 7 (32-bit and 64-bit), Windows 10 (32-bit and 64-bit) and Windows Server 2016 operating systems.

The package comprises an EcoStruxure Control Expert V14 DVD in six languages (English, French, German, Italian, Spanish and Chinese).

### EcoStruxure Control Expert package

#### EcoStruxure Control Expert DVD package

Description	Software size	Reference	Weight kg/lb
EcoStruxure Control Expert DVD package	Small Large Extra Large Extra Large Safety	CEXPACKAGEV14	—

## Software

## EcoStruxure Control Expert software

## Small

## EcoStruxure Control Expert Small version 14 software

For Modicon M340: **All models**For Modicon Momentum: **171CBU78090/98090/98091**For distributed I/O: **Modicon ETB, TM7, OTB, STB, Momentum**

## EcoStruxure Control Expert Small version 14 software licenses (1) (2)

Description	License type	Reference	Weight kg/lb
EcoStruxure Control Expert Small software licenses	Single (1 station)	CEXSPUCZSSPMZZ	–
	Group (3 stations)	CEXSPUCZSGPMZZ	–
	Team (10 stations)	CEXSPUCZSTPMZZ	–

## License upgrades for EcoStruxure Control Expert Small version 14

From	To	Reference	Weight kg/lb
Single (1 station)	Group (3 stations)	CEXUPNCZSGPMZZ	–
Group (3 stations)	Team (10 stations)	CEXUPNCZSTPMZZ	–

(1) For compatibility of EcoStruxure control Expert software/automation platforms and distributed I/O, refer to the selection guide on page 1/2.

(2) Renewals for EcoStruxure Control Expert new versions are possible. Please contact our Customer Care Center for more information.

# Software

## EcoStruxure Control Expert software

### Large

1



EcoStruxure Control Expert

#### EcoStruxure Control Expert Large version 14 software

For Modicon M340: **All models**  
 For Modicon M580: **BMEH5820/BMEP5810/5820/5830**  
 For Modicon Momentum: **171CBU78090/98090/98091**  
 For Modicon Premium: **TSX571e...4e**  
 For Modicon Quantum: **140CPU31110/43412U/53414U**  
 For distributed I/O: **Modicon ETB, TM7, OTB, STB, Momentum**

#### EcoStruxure Control Expert Large version 14 software licenses (1) (2)

Description	License type	Reference	Weight kg/lb
<b>EcoStruxure Control Expert Large software licenses</b>	Single (1 station)	<b>CEXSPUCZLSPMZZ</b>	–
	Group (3 stations)	<b>CEXSPUCZLGPMZZ</b>	–
	Team (10 stations)	<b>CEXSPUCZLTPMZZ</b>	–

#### License upgrades for EcoStruxure Control Expert Large version 14

From	To	Reference	Weight kg/lb
Single (1 station)	Group (3 stations)	<b>CEXUPNCZLGPMZZ</b>	–
Group (3 stations)	Team (10 stations)	<b>CEXUPNCZLTPMZZ</b>	–

#### Upgrade to EcoStruxure Control Expert Large from EcoStruxure Control Expert Small

Type of upgrade	Reference	Weight kg/lb
The number of stations is unchanged		
Small to Large Single (1 station)	<b>CEXUPGCZLSPMZZ</b>	–
Small to Large Group (3 stations)	<b>CEXUPGCZLGPMZZ</b>	–
Small to Large Team (10 stations)	<b>CEXUPGCZLTPMZZ</b>	–

(1) For compatibility of EcoStruxure Control Expert software/automation platforms and distributed I/O, refer to the selection guide on page 1/2.

(2) Renewals for EcoStruxure Control Expert new versions are possible. Please contact our Customer Care Center for more information.



# Software

## EcoStruxure Control Expert software

### Extra Large

#### EcoStruxure Control Expert Extra Large version 14 software

For Modicon M340: **All models**  
 For Modicon M580: **All models**  
 For Modicon Momentum: **171CBU78090/98090/98091**  
 For Modicon Premium: **TSX571e...6e**  
 For Modicon Quantum: **140CPU31110/43412U/53414U/65150/65160/65260/67160/67260/67261**  
 For distributed I/O: **Modicon ETB, TM7, OTB, STB, Momentum**

#### EcoStruxure Control Expert Extra Large version 14 software licenses (1) (2)

Description	License type	Reference	Weight kg/lb
<b>EcoStruxure Control Expert Extra Large software licenses</b>	Single (1 station)	<b>CEXSPUCZXSPMZZ</b>	–
	Group (3 stations)	<b>CEXSPUCZXGPMZZ</b>	–
	Team (10 stations)	<b>CEXSPUCZXTPMZZ</b>	–
	Entity (100 stations)	<b>CEXSPUCZXEPMZZ</b>	–

#### License upgrades for EcoStruxure Control Expert Extra Large

From	To	Reference	Weight kg/lb
Single (1 station)	Group (3 stations)	<b>CEXUPNCZXGPMZZ</b>	–
Group (3 stations)	Team (10 stations)	<b>CEXUPNCZXTPMZZ</b>	–

#### Upgrade to EcoStruxure Control Expert Extra Large from EcoStruxure Control Expert Large

Type of upgrade	Reference	Weight kg/lb
The number of stations is unchanged		
Large to Pro Extra Large Single (1 station)	<b>CEXUPGCZXSPMZZ</b>	–
Large to Pro Extra Large Group (3 stations)	<b>CEXUPGCZXGPMZZ</b>	–
Large to Pro Extra Large Team (10 stations)	<b>CEXUPGCZXTPMZZ</b>	–

#### EcoStruxure Control Expert Extra Large Floating version 14 software

#### EcoStruxure Control Expert Extra Large Floating software licenses (1) (2)

Description	License type	Reference	Weight kg/lb
<b>EcoStruxure Control Expert Extra Large Group Floating software licenses</b>	Group (3 stations)	<b>CEXSPUCZXGPTZZ</b>	–
	Team (10 stations)	<b>CEXSPUCZXTPZZ</b>	–

(1) For compatibility of EcoStruxure Control Expert software/automation platforms and distributed I/O, refer to EcoStruxure Control Expert Pro Extra Large in the selection guide on page 1/3.

(2) Renewals for EcoStruxure Control Expert new versions are possible. Please contact our Customer Care Center for more information.

# Software

## EcoStruxure Control Expert software

### Extra Large Safety

### M580 Safety Add-ons

1



EcoStruxure Control Expert

### EcoStruxure Control Expert Extra Large with M580 Safety version 14 software

For Modicon M340: **All models**  
 For Modicon M580: **All models**  
 For Modicon M580 Safety: **All models**  
 For Modicon Momentum: **171CBU78090/98090/98091**  
 For Modicon Premium: **TSX571●...6●**  
 For Modicon Quantum: **140CPU31110/43412U/53414U/65150/65160/65260/67160/67260/67261**  
 For distributed I/O: **Modicon ETB, TM7, OTB, STB, Momentum**

### License use examples

EcoStruxure Control Expert Extra Large with M580 Safety can now be managed in different ways:

- With an Add-on license that can be added to an XL or L license (see below on this page)
- Directly with a bundle license (EcoStruxure Control Expert XL with M580 Safety) (see below on this page)

To manage BMEP582040S or BMEH582040S Safety CPUs, the following licenses can be used:

- CEXSPUCZL●PMZZ (EcoStruxure Control Expert Large) with CEXADSCZZ●PMZZ (M580 Safety Add-on for L or XL single)

To manage all Modicon M580 Safety CPU models, the following licenses can be used:

- CEXSPUCZX●PMZZ (EcoStruxure Control Expert Large) with CEXADSCZZ●PMZZ (M580 Safety Add-On for L or XL single)
- CEXSPSCZX●PMZZ (EcoStruxure Control Expert Large Safety)

### EcoStruxure Control Expert Extra Large with M580 Safety software licenses (1)(2)

Description	License type	Reference	Weight kg/lb
<b>EcoStruxure Control Expert Extra Large with M580 Safety software licenses</b>	Single (1 station)	<b>CEXSPSCZXSPMZZ</b>	–
	Group (3 stations)	<b>CEXSPSCZXGPMZZ</b>	–
	Team (10 stations)	<b>CEXSPSCZXTPMZZ</b>	–
	Entity (100 stations)	<b>CEXSPSCZXEPMZZ</b>	–

### EcoStruxure Control Expert Extra Large Educational with M580 Safety software licenses (1) (2)

Description	License type	Reference	Weight kg/lb
<b>EcoStruxure Control Expert Educational with M580 Safety software licenses</b>	Entity (100 stations)	<b>CEXSPSEZXEPMZZ</b>	–

### M580 Safety Add-on software licenses for EcoStruxure Control Expert version 14 software (Large safety and Extra Large Safety)

#### M580 Safety Add-on software licenses for EcoStruxure Control Expert V14 Large Safety software license and EcoStruxure Control Expert V14 Extra Large Safety software license

Description	License type	Reference	Weight kg/lb
<b>M580 Safety Add-ons for EcoStruxure Control Expert Large (L) or Extra Large (XL) software licenses</b>	Single (1 stations)	<b>CEXADSCZZSPMZZ</b>	–
	Group (3 stations)	<b>CEXADSCZZGPMZZ</b>	–
	Team (10 stations)	<b>CEXADSCZZTPMZZ</b>	–
	Entity (100 stations)	<b>CEXADSCZZEPMZZ</b>	–

(1) For compatibility of EcoStruxure Control Expert software/automation platforms and distributed I/O, refer to EcoStruxure Control Expert Extra Large in the selection guide on page 1/3.

(2) Renewals for EcoStruxure Control Expert new versions are possible. Please contact our Customer Care Center for more information.



BMXXCAUSBH000



TSXPCX1031



TSXCUSB485



TCSWAAC13FB

### Accessories for connecting to the PC programming terminal

Description	Use		Length m/ft	Reference	Weight kg/lb
	From processor port	To PC port			
<b>PC terminal connection cables</b> (PC to PAC) (1)	USB mini B port BMXP341000/2000/20002 BMEP580000	USB port	1.8/ 5.91	<b>BMXXCAUSBH018</b>	0.065/ 0.143
			4.5/ 14.8	<b>BMXXCAUSBH045</b>	0.110/ 0.243
	Mini-DIN port Premium TSX5710/20/30/40	RS 232D (9-way SUB-D connector)	2.5/ 8.20	<b>TSXPCX1031</b>	0.170/ 0.375
		USB port (USB/ RS 485 converter)	0.4/ 1.31	<b>TSXCUSB485</b> (2)	0.144/ 0.318
		USB port (mini-DIN/ RJ45 cordset)	2.5/ 8.20	<b>TSXCRJMD25</b> (2)	0.150/ 0.331
	Modbus port 15-way SUB-D Quantum 140CPU31110 140CPU43412A 140CPU53414B	RS 232D (9-way SUB-D connector)	3.7/ 12.1 15/ 49.2	<b>990NAA26320</b> <b>990NAA26350</b>	0.300/ 0.661 0.180/ 0.397
	USB port Premium TSX5750/60 Quantum 140CPU601	USB port	3.3/ 10.8	<b>UNYXCAUSB033</b>	–
	Modbus port, RJ45 connector Quantum 140CPU601	RJ 45 connector	1/ 3.28	<b>110XCA28201</b>	–
			3/ 9.84	<b>110XCA28202</b>	–
			6/ 19.7	<b>110XCA28203</b>	–

<b>PC terminal connection cables</b> (PC SUB-D to Modicon STB I/O)	HE 13 connector Modicon STB I/O network interface module (NIM)	RS 232D (3) (9-way SUB-D connector)	2/ 6.56	<b>STBXCA4002</b>	0.210/ 0.463
<b>USB/SUB-D adaptor</b> (PC USB to Modicon STB I/O)	HE 13 connector Modicon STB I/O network interface module (NIM) with Modicon STB I/O	USB port (4)	–	<b>SR2CBL06</b>	0.185/ 0.408

Description	Use	Reference	Weight kg/lb
<b>Universal Bluetooth® interface (UBI)</b>	<p>Provides Bluetooth® connectivity for products such as the Modicon M340/Premium platforms and Altivar/Lexium servo drives, via their serial port (RS 485).</p> <p>Used for setup and maintenance of products. Designed for permanent installation and can be fitted on the inside or outside of electrical enclosures.</p> <ul style="list-style-type: none"> <li>■ Protocols supported: Modbus and Uni-Telway</li> <li>■ Powered via the product's RS 485 serial port</li> <li>■ Max. range in direct line of sight: 20 m/65.6 ft</li> </ul> <p>The kit comprises:</p> <ul style="list-style-type: none"> <li>■ A Universal Bluetooth® interface (UBI)</li> <li>■ An RJ45/mini-DIN cable (length 1 m/3.28 ft)</li> <li>■ An RJ45/RJ45 cable (length 1 m/3.28 ft)</li> <li>■ A fixing clamp for installation inside the electrical enclosure</li> <li>■ A CD with configuration software and user manual</li> </ul>	<b>TCSWAAC13FB</b>	0.320/ 0.705

(1) The **490NTW00002** and **490NTW00002U** RJ45 ConneXium cables (2 m/6.56 ft) can be used to connect the PC to the SERVICE port of M580 CPUs or X80 drop. Please consult our website [www.schneider-electric.com](http://www.schneider-electric.com).

(2) The **TSXCUSB485** converter requires use of the **TSXCRJMD25** mini-DIN/RJ45 cordset.

(3) Use the **SR2CBL06** cable for connection on a USB port (4).

(4) Adapter equipped with a USB connector (PC side) and a 9-way SUB-D connector (STBXCA4002 cable side); requires the **STBXCA4002** cable (9-way SUB-D/HE 13) for connection to the HE 13 connector on the Modicon STB NIM.



## 2 - EcoStruxure Control Expert Companion software

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### EFB Toolkit software

- Presentation, setup ..... page 2/2
- References ..... page 2/3

### Unity DIF software

- Presentation, setup ..... page 2/4
- References ..... page 2/5

### Unity Loader software

- Presentation ..... page 2/6
- References ..... page 2/7

### EcoStruxure Control Expert Specific libraries

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- References ..... page 2/9





Unity EFB Toolkit

**Presentation**

Unity EFB Toolkit software helps to develop EFs and EFBs in “C” programming language. As an option with Unity Pro, it can be used to extend the standard Unity Pro function blocks in order to increase functionality. This software comes with *Microsoft Visual Studio*, which can be used to debug the function blocks developed in the Unity Pro PLC simulator. Unity EFB Toolkit also includes a service for creating and managing families of function blocks and integrating them in Unity Pro.

**Setup**

Unity EFB Toolkit manages the whole process of developing Unity Pro function blocks:

- User-friendly graphical user interface with automatic file organization
- Powerful tools for testing and debugging
- Management of compatibilities and software versions of created functions
- Generation of executable files for subsequent installation of functions on different Unity Pro stations

**Managing function block families**

EFB Toolkit helps to create and manage function block families. The function blocks developed, also known as EFs/EFBs, are stored in families. It makes it possible to create an organized library of functions written in “C” language. Once created, these function block families are installed on the Unity Pro stations for the purpose of extending the standard Unity Pro libraries. Integration in Unity Pro can be executed from Unity EFB Toolkit or via the tool for updating Unity Pro libraries, which allows these families to be distributed without the use of any other software.

**Developing function blocks**

The EFB Toolkit software allows the user to create a function block as follows:

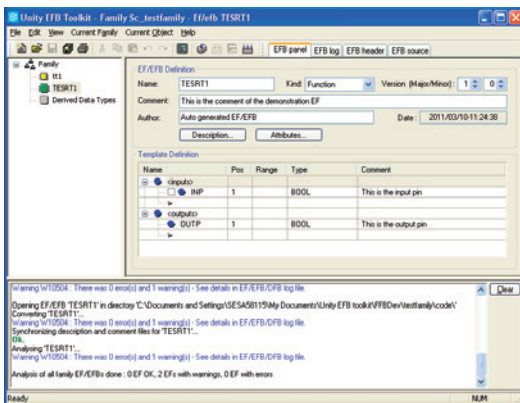
- Declaration of the function block interface in the same way as for the DFBs in Unity Pro
- Definition of all data types needed (elementary, structures, tables)
- Support of public and private variables
- Generation of all files and the block “C” coding frame (the user only adds functionality to this frame)
- Granting access to numerous internal PAC services, such as the real-time clock, PAC variables and data, system words and math functions, including high-precision numerical processing in “double” format
- Structure of the function block family (compilation/link for all Unity Pro automation platforms)
- Provision of a debugging environment: the function blocks created can easily be debugged in *Microsoft Visual Studio* by downloading a Unity Pro application containing the function developed in the Unity Pro PLC simulator. The debugging functions in *Microsoft Visual Studio*, especially breakpoints, step-by-step operations, display of the code/data and manipulation of the data, can be accessed without restriction.
- Support for managing Unity Pro versions, important during the function block maintenance phase

**Compatibility**

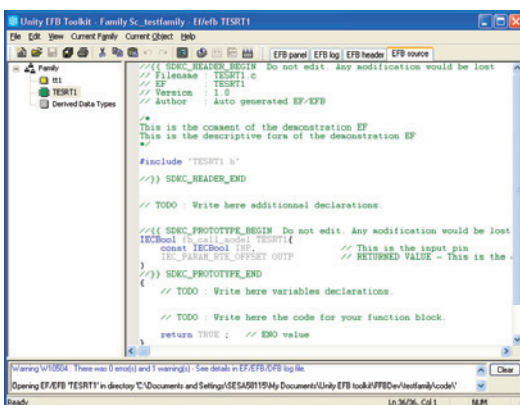
Unity EFB Toolkit is compatible with Unity Pro Medium, Large and Extra Large. EFs and EFBs can be developed for Modicon Premium, Quantum, M340, M580 and Unity Momentum platforms.

The latest available EFB Toolkit version is V14:

- OS compatibility Windows® 7 (32-bit and 64-bit), Windows® 10 (32-bit and 64-bit)
- The generated libraries can be installed on EcoStruxure Control Expert or lower Unity Pro versions on different systems.



EFB Toolkit: Managing function block families



EFB Toolkit: Editor

# Software

Unity Pro software  
Unity EFB Toolkit software

## References

Unity EFB Toolkit and its documentation are supplied in electronic format on DVD-ROM in English and are available for download at [schneider-electric.com](http://schneider-electric.com).

EFB Toolkit package includes:

- Unity EFB Toolkit DVD
- GNU Compiler CD
- Microsoft Visual Studio DVD

Description	Type	Language	Reference	Weight kg/lb
Unity EFB Toolkit software	Single license (1 station)	English (software and electronic documentation)	UNYSPUZFUCD80	–





Unity DIF

2

**Presentation**

Unity DIF software helps to compare two Unity Pro application files and represents differences in a graphical format similar to Unity Pro graphics for consistency and better understanding. The differences are displayed graphically and textually based on the type of section chosen. Unity DIF improves productivity during the main life stages of a control system, mainly during development and debugging of applications and commissioning, operation and maintenance of the installation.

**Setup**

Unity DIF compares two Unity Pro application files (XEF, ZEF, STU and STA) and detects anything ADDED, DELETED and MODIFIED. The user interface and graphical representation of differences are similar to Unity Pro for consistency and ease of understanding the differences.

Unity DIF can be launched in several ways:

- From Unity Pro
- From the Windows Start menu
- From a command line interface

Unity DIF can provide differences for the following sections:

- PAC Configuration (Hardware and Network)
- Derived Data Types
- Derived FB Types
- Variables and FB Instance
- Motion
- Communication
- Programs
- Animation Table
- Operator Screen
- DTM Catalog
- Project Settings

The result of the comparison can be printed or saved in .pdf and .txt file formats.

**Windows® OS Compatibility**

Unity DIF is compatible with Windows 7 (32-bit and 64-bit), Windows 10 (32-bit and 64-bit) and Windows Server 2008 R2 (64-bit).

**Comparison (1)**

The base and compare files have to be selected by the user, and the results of the comparison will be displayed with respect to the base file as reference.

Before initiating comparison, the user can select his preference of required section for comparison.

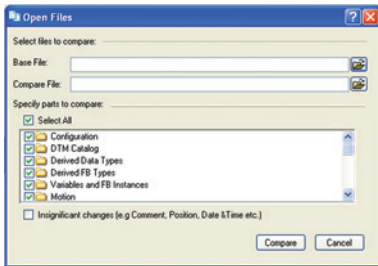
**Displaying results**

Upon comparison, the section summary will be loaded with the complete list of differences. The user can navigate through the project browser window or using the F7 and F8 keys.

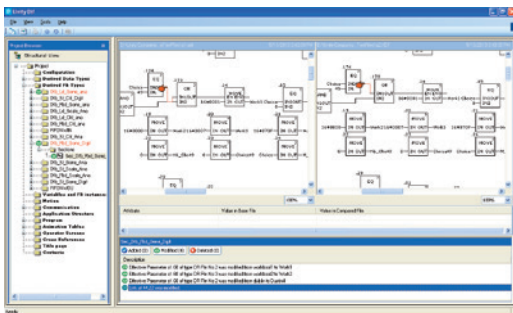
The differences will be highlighted in three different colors signifying Added, Deleted or Modified types. Colors can be customized as per the user's preference. The detailed report can be generated through Print or can be Saved for later reference.

Unity DIF also supports command line processing and .txt report generation for interfacing with Partner software.

(1) Comparison of STU and STA requires Unity Pro to be available.



Selection of elements to compare



Displaying results

## Software

Unity Pro software  
Unity DIF software

### References

Unity DIF software is free and downloadable from our website:  
[www.schneider-electric.com](http://www.schneider-electric.com).

Compatibility: Unity Pro V2.1 or later.

Description	Language	Type	Reference	Weight kg/lb
Unity DIF software	English (software and electronic documentation)	Single license (1 station)	UNYDFFXZZSPA80 (1)	–

(1) Available on our website [www.schneider-electric.com](http://www.schneider-electric.com).



Unity Loader

2

Presentation

Unity Loader is companion software to Unity Pro and is used to perform maintenance operations on automation applications. Its easy setup and the small size of its executable make it a vital tool for updating Unity Pro projects without needing to use Unity Pro. It can also be used for updating the embedded software on Modicon M340, M580, M580S or Momentum Unity PACs or on Modicon X80 I/O modules. It performs the following main functions:

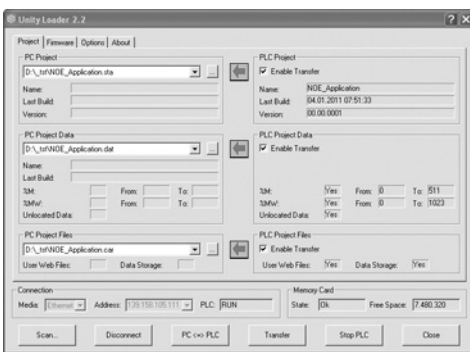
- Transferring automation project components, such as the program and data, from the PC to the PAC or the PAC to the PC
- Transferring files and user Web pages stored in the memory card of Modicon M340 PACs
- Transferring the firmware from the PC to Modicon M340, M580, M580S or Momentum Unity PACs or to Modicon X80 I/O modules

Software graphic interface

The interface is easy to use and has four tabs for access to different operations:

- The “**Project**” tab manages the transfer of projects (program and data) between the PC and the PAC CPU. The software transfers the program (application file format: .stu; archive file format: .sta) and data (located and unlocated; data file format: .dat) of a Unity Pro project in both directions. The program and data files created by Unity Loader are compatible with Unity Pro. When it is connected to the PAC, Unity Loader displays the information associated with the data read in the PAC. This information is displayed on the PC for the selected files. The user decides which project elements will be transferred by a single command after validation of the required transfers.
  - *Modicon M340 PACs and BMXRMS●●8MFP memory card only:* the files and user Web pages can be transferred from the memory card to the PC and vice versa.
  - *BMXNOE0110 with flash memory card only:* Web pages stored in the flash memory can be transferred from the module to the PC and vice versa.
- The “**Firmware**” tab can be used to update the firmware in the Modicon M340, M580, M580S or Momentum Unity PACs or on Modicon X80 I/O modules. The screen displays the detailed content of the firmware versions existing in the module and on the PC. Firmware updating works in the same way as project transfers.
- The “**Options**” tabs is used to configure the working environment, especially the location of files on the PC and the selection of one of the six languages supported (English, French, German, Italian, Spanish and Chinese) for the user interface and online help.
- The “**About...**” tab displays information about the software.

*Note: Regardless of which tab is selected, the connection status with the PAC is continuously displayed, together with commands for connection/disconnection and changing the PAC operating mode.*



Unity Loader: Project tab

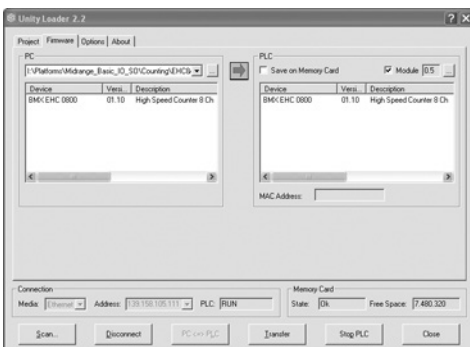
Modicon M340 PAC and BMXRMS●●8MFP memory card only

The Unity Loader software can download the project files and the firmware (controller or module) onto a flash memory card (**BMXRMS●●8MFP** only) plugged into the PAC CPU.

This firmware download can then be used to update a remote Modicon M340 PAC.

Automation of Unity Loader commands

Projects can be downloaded/uploaded between a PAC and a supervisory station equipped with Unity Loader software by means of a command file included in the supervisory application.



Unity Loader: Firmware tab



Unity Loader

**Communication between the PC and the PAC**

Unity Loader supports the following PC-to-PAC communication:

- Modicon Quantum Unity Pro PACs: Modbus communication, transfer of project components only
- Modicon Premium Unity Pro PACs: Unitelway communication, transfer of project components only
- Modicon M340, M580 or Momentum Unity PACs or Modicon X80 I/O modules: communication via Ethernet and USB ports, transfer of project components and firmware. See the table below:

Reference	Type of module	Ethernet port	USB port
BMXP342000	M340 CPU with Modbus		
BMXP342010/20103	M340 CPU with CANopen		
BMXP342020	M340 CPU with integrated Ethernet port		
BMXP342030/20302			
BMXNOE0100/0110	X80 module Ethernet Modbus/TCP		
BMXAMI/ART/AMO/AMM	X80 module Analog I/O		
BMXEHC0200/0800	X80 module Counter		
BMXMSP0200	X80 module Motion control		
BMEP58 10XX/20XX/30XX/40XX	M580 CPUs		
BMENOC03●1	M580 communication module		
171CBU78090	Momentum Unity CPU with integrated port		
171CBU98090/ 171CBU98091	Momentum Unity CPU with integrated port		

Supported
  Supported if CPU has integrated Ethernet port

For Ethernet networks, Unity Loader contains a network scanner which can be used to scan a range of network addresses. Once a recognized Modicon M340, M580 or Momentum Unity PAC has been selected, data transfer operations can be performed.

**References**

Unity Loader can be downloaded free of charge from our website [www.schneider-electric.com](http://www.schneider-electric.com), download section.

**Compatibility**

Unity Loader is independent of Unity Pro and compatible with Modicon M340, M580 or Momentum Unity PACs, Unity Pro Quantum PACs via Modbus and Unity Pro Premium PAC via Unitelway. The program files and PAC data files are compatible between Unity Pro and Unity Loader.

Description	Type	Reference	Weight kg/lb
Unity Loader software	Single license (1 station)	Software can be downloaded free of charge from our website <a href="http://www.schneider-electric.com">www.schneider-electric.com</a>	–



Unity specific Libraries

**Presentation**

The CONT\_CTL process control function block library supplied with Unity Pro software can be supplemented with optional specialized libraries so as to meet specific needs such as:

- Predictive control
- Fuzzy logic controller
- HVAC
- Mass flow calculation

**Fuzzy Control Library**

This library is used in particular in the water treatment field, for example for controlling chlorine levels in fresh water pools or controlling water levels in high-level reservoirs.

**Flow Calculation Library**

This library is used in the vertical Oil & Gas field, for measuring the gas flow in compliance with the *American Gas Association (AGA)* standard. This version of the library includes the AGA3, AGA7 and AGA8 function blocks.

**TeSys Library**

This library provides function blocks for TeSys T and TeSys U starter-controllers for M340 and Premium platforms. It includes function blocks and a help function for Unity Pro.

**PCR Library for Unity Pro and Concept**

This library is used for predictive control of process applications. Originally developed for reactors, predictive control can be used in other industrial sectors. Schneider Electric's *Companion Unity & Libraries* team works in partnership with the French company *Sherpa Engineering*, who specialize in predictive control consultancy services.

**Heating Ventilation & Air Conditioning Library**

This library is used in the HVAC field and deals with repetitive temperature control and humidity problems using ventilation equipment.

**GPL (General Purpose Library) for EcoStruxure Control Expert**

This library offers functional blocks that are derived from Devices and Process Library but only has Unity Pro components (DFBs). The Devices and Process Library supports several Schneider Electric devices including TeSys T and TeSys U starters-controllers, Modicon STB distributed inputs/ outputs, power meters, Altivar variable speed drives, Icla and Lexium integrated drives, SEPAM digital protection relays, various fieldbus communications and other standard objects for motors. There are approximately 100 objects in the library.



Unity specific Libraries

#### Specific libraries depending on the software used

Specific libraries depending on the software used (see below) can be ordered separately.

Control libraries				
Description	Target software	Type	Reference	Weight kg/lb
PCR Library	Unity Pro and Concept	Single license (1 station)	UNYLPCZAUWB	–
Fuzzy Control Library	Unity Pro	Single license (1 station)	UNYLFZZAUWB12	–
TeSys Library			UNYLTSSZAUWB10	–
Heating Ventilation & Air Conditioning Library			UNYLHVZAUWB10	–
Flow Calculation Library			UNYLAGZAUWB20	–
GPL (General Purpose Library) Version 2018		(1)	(1)	–

(1) PSx GPL Library is available for free.





# 3 - OPC data server software, Product reference index

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## OPC data server software

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- Architectures ..... page 3/3
- Setup ..... page 3/5
- Functions ..... page 3/6
- References ..... page 3/7
- Time stamping system ..... page 3/8
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## Product reference index

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OPC Factory Server

3



#### Presentation

Based on the OLE for Process Control (OPC) standard, Schneider Electric's OPC Factory Server (OFS) software allows "client" software applications, such as supervisors/SCADA and customized interfaces, to access the data of Schneider Electric automation system and electrical distribution devices connected to networks or fieldbuses in real time.

It also allows communication with third-party devices supporting Modbus and Modbus/TCP protocols.

OFS enables simpler, more open and transparent communication between your software applications and your devices. These are just some of the advantages that result in a complete interoperability solution that is central to your process.

In version V3.6, the OFS provides the following additional features:

- **OPC DA** (OPC Data Access)
- **.NET API interface**
- Native support for a redundant link with the PAC
- Access to time-stamped variables in the PAC or X80 drops
- V3.6 is compatible with Wonderware WSP environment (OPC DA compatible only). More details are available on the Wonderware Global Customer Support site

There are two versions of the OFS V3.6 offer supporting the OPC DA protocol:

- **OFS Small:** Data server for 1,000 items (1).
- **OFS Large:** Data server with an unlimited number of items (1).

#### Devices and protocols supported

OFS software is a multi-device data server: it allows simultaneous use of several communication protocols, and it provides client applications with a set of services for accessing control system items that may be local or remote, via physical address or via symbol.

**Devices supported:**

- Modicon Quantum, Premium, M340, M580, Micro, Compact and Momentum PACs
- Schneider Electric TSX Series 7 and April Series 1000 PACs
- Modbus serial devices connected via Schneider Electric gateways: TSXETG10●●, EGX●●● ranges, etc.
- Uni-Telway serial devices connected via Schneider Electric gateways (TSXETG1010)

**Networks and protocols supported:**

- Modbus: Modbus serial, Modbus Plus, Modbus/TCP
- X-Way/Uni-TE: Uni-Telway, Fipway, ISAWay, PClway

#### Redundant link on Modbus/TCP

The OFS V3.6 incorporates native support for a redundant link with the PAC in order to optimize system availability without any impact on the SCADA application. OFS automatically changes over from the primary to the standby communication path in case of a communication fault.

#### Openness

The development of specialized interfaces is simpler with OFS V3.6 software, which is aimed at two types of user in particular:

■ **End users** who want either to interface their supervision or human/machine interface applications with Schneider Electric equipment, or to develop applications on a PC (supervisory control screens, Excel spreadsheets etc.) requiring access to control system data.

■ **Suppliers of control system or industrial data processing software** (supervision, human/machine interfaces, etc.) seeking to develop, within their standard products, an OPC Client interface capable of accessing data in Schneider Electric equipment via the OFS server.

(1) "item": variable, structure, table etc. in the Unity Pro application.



OPC Factory Server: Home page

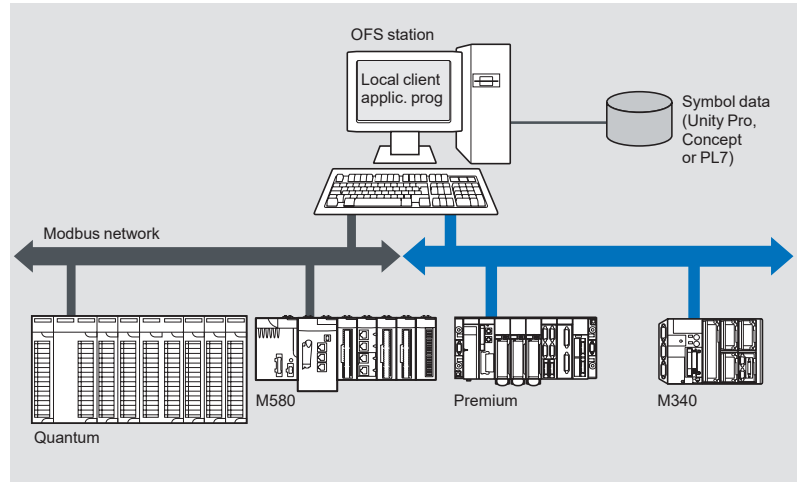
**Supported architectures**

The OFS server allows four access modes:

- A purely local mode
- Remote access from an OPC DA client
- Remote access from an OPC.NET client

**Local access**

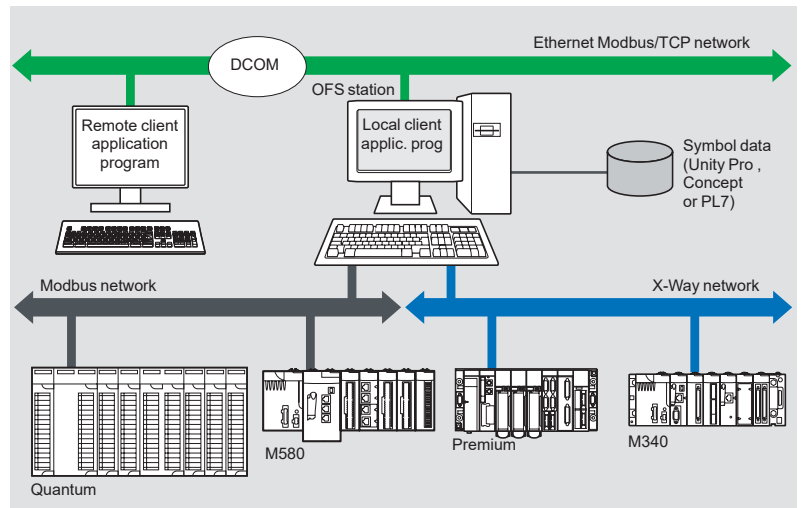
The client application and the OFS server are on the same PC.



**Remote access from an OPC DA client**

The client application and the OFS data server are on remote stations.

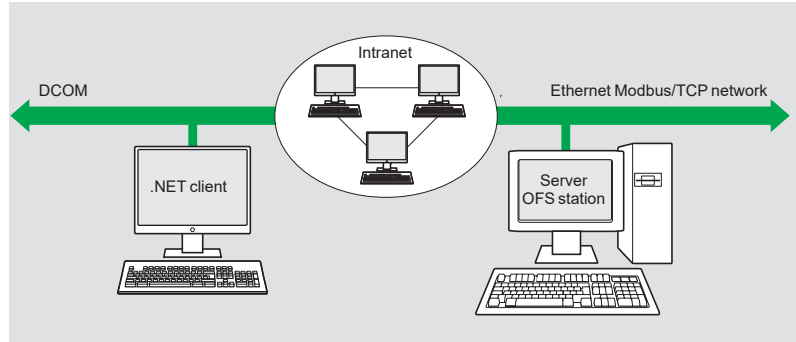
Communication between the client station and the OFS server is conducted through the DCOM layer (Microsoft) via the OPC DA protocol.



**Architectures supported (continued)**

**Remote access from an OPC .NET client**

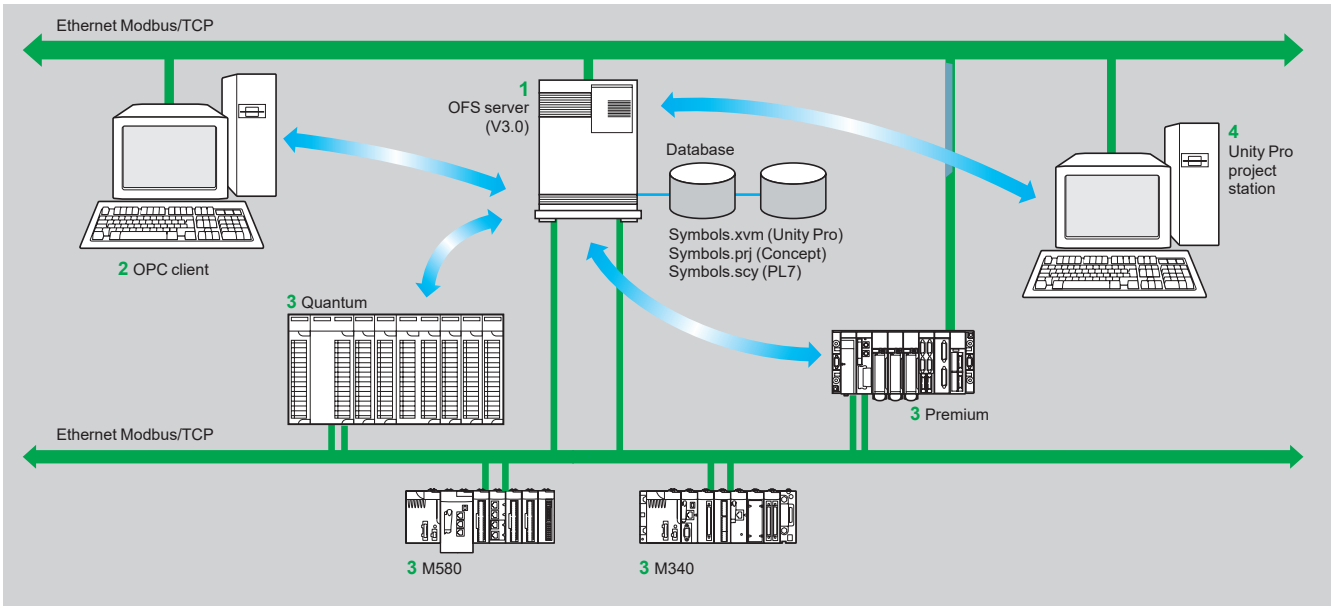
The .NET client application program and the OFS data server are on remote stations. Communication between the client station and the OFS server is conducted through the DCOM layer (Microsoft) via the OPC DA protocol.



The .NET Microsoft compatibility of the OFS server has been developed to allow an OPC .NET client to access OFS server items on an Intranet network via the OPC .NET API interface.

This interface provides interoperability between existing OPC applications and applications developed in the standard .NET environment.

## Setup



The OFS server **1** is at the center of the data exchanges. It makes variables exchanged between the OPC client **2** and the PAC **3** consistent in one of three ways, using a symbol (or variables) database:

- The variables database is either the Unity Pro project **4**, or the Concept project. In both these cases, Unity Pro or Concept needs to be installed on the OFS server station.
- Or the variables database is an export file (SCY for PL7, XVM for Unity Pro). PL7 and Unity Pro are not required in either of these cases.
- Or the variables database is the PAC itself. In this case neither Unity Pro nor an export file is needed. This does not apply to Momentum and TSX Micro PACs. If an inconsistency is detected (following online modification of the PAC program for example), OFS resynchronizes itself automatically as a background task, without breaking communication between the PAC and the OPC client. For this function the following minimum versions are required:
  - OFS V3.35
  - Unity Pro V6.0
  - Modicon M340 V2.3, M580 V1.0, Premium V2.9 and Quantum V3.0 PACs



**Function**

**Development of client applications**

OFS software has 4 types of interface:

■ **OLE Automation interface (OPC DA)**

Particularly suitable for end users, this enables the development of OPC client applications in Visual Basic, in Visual Basic for Excel, and in C++.

■ **OLE Custom interface (OPC DA)**

Used primarily by suppliers of automated control system or industrial IT products, this interface enables the development of applications in C++ in order to access the OFS software OPC server. It is aimed at software development experts in particular, so that they can integrate the client application into their standard products. It is the interface with the highest performance, in terms of access time to data stored in the OPC server. It requires extensive knowledge of C++ programming to set up.

■ **OPC .NET API wrapper interface**

The .NET Microsoft compatibility of the OFS data server gives an OPC .NET client standard access to OFS server items via an Intranet network, thus providing greater interoperability with standard .NET environments.

*Note: In this case, communication between the OPC .NET client and the OFS server is conducted through the DCOM layer (or COM layer in a local configuration) via the OPC DA protocol.*



OPC Factory Server

#### References

OFS V3.6 software for PC compatible stations (minimum configuration: Pentium 566 MHz processor, 128 MB of RAM) running Windows® 7 (32-bit or 64-bit) or Windows 8 (32-bit or 64-bit).

The OFS V3.6 offer comprises:

- OPC server software
- OPC server simulator (for debugging the application when no PACs are present)
- OFS server configuration software
- An example of OPC client for setting up applications
- The setup documentation on DVD-ROM
- A reference document on “time stamping system” solutions
- A tool to help with sizing and configuring “time stamping system” solutions

Supplied on DVD-ROM, the software operates independently on a PC. It interfaces with the variable export files generated by PL7, ProWORX, Concept, and Unity Pro software.

It also provides a direct dynamic link to the Unity Pro and Concept applications.

OFS V3.6 software is available in two versions :

■ **Small Version TLXCDS●OFS36**

- Maximum of 1,000 items (1)
- Protocol supported: OPC DA
- Single station and 10-station site licenses

■ **Large Version TLXCDL●OFS36**

- Unlimited number of items (1)
- Protocol supported: OPC DA
- Single station, 10-station and 200-station site licenses

#### OPC Factory Server V3.6 Small

Description	License type	Reference	Weight kg/lb
<b>OPC Factory Server V3.6 Small software</b> ■ Maximum of 1000 items (1) ■ Protocols supported: OPC DA and OPC UA	Single station	TLXCDSUOFS36	–
	10 stations	TLXCDSTOFS36	–

#### OPC Factory Server V3.6 Large

Description	License type	Reference	Weight kg/lb
<b>OPC Factory Server V3.6 Large software</b> ■ Unlimited number of items (1) ■ Protocols supported: OPC DA, OPC XML-DA and OPC UA	Single station	TLXCDLUOFS36	–
	10 stations	TLXCDLTOFS36	–
	200 stations	TLXCDFOFS36	–

#### OPC Factory Server V3.6 upgrades

Description	Reference	Weight kg/lb
<b>Update for OPC Factory Server V3.6 Small</b>	TLXCDUPDSOFS	–
<b>Update for OPC Factory Server V3.6 Large</b>	TLXCDUPDLOFS	–

(1) “item”: variable, structure, table etc. in the Unity Pro application.

### Presentation

The time stamping system is a complete solution providing a SCADA with a sequence of events that are time-stamped at source, enabling the user to analyze the source of any abnormal behavior in an automated system.

The SOE (sequence of events) is displayed in the alarm log or in the list of events for a client such as a SCADA.

Each event in the SOE is a change of value (transition) of a discrete I/O detected by a time stamping module.

### Advantages

Using the time stamping system has the following advantages:

- No PAC programming
- Direct communication between the time stamping modules and the client. If the time stamping modules are in an Ethernet I/O drop, the bandwidth of the PAC communication is not used
- Consistency of the I/O values between the process (time stamping modules) and the client
- Consistency is maintained irrespective of the operating mode
- No loss of events under normal operating conditions
- Management of Hot Standby configurations on the PAC and/or SCADA redundancy

### Composition of a time stamping architecture

#### BMXCRA31210 and BMECRA31210 modules

This time stamping module can be at the source of any discrete I/O signal located in the drop with a resolution of 10 ms.

To avoid losing any events, all events are stored and kept in a buffer located in the product until OFS takes them.

Synchronization of the CRA module uses the NTP protocol.

#### BMXERT1604T module

This module has 16 discrete inputs which carry out the time stamping on source outputs with a resolution of 1 ms.

To avoid losing any events, the events are stored and kept in a buffer located in the product until OFS takes them.

This module can be placed either in an RIO drop, or in a local rack equipped with a BM●CRA31210 module.

The CRA module is synchronized via the DCF 77 or IIRIG-B standards.

#### OFS V3.6

OFS V3.6 is used to access events stored in the various buffers in the architecture and to notify the SCADA of them via the standard OPC DA protocol.

Time stamped variables can be provided by the BMXERT1604T, discrete modules plugged into X80 drops, or even by the CPU since Unity V10.

#### Vijeo Citect V7.3

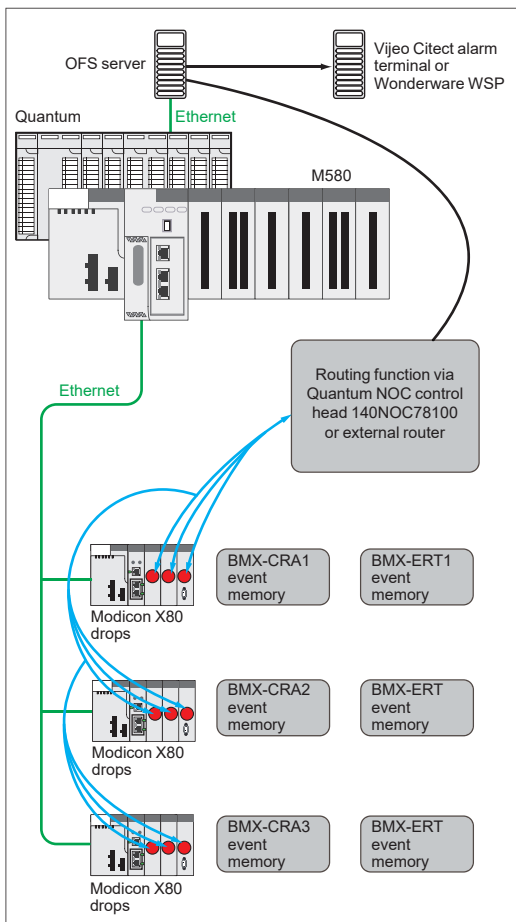
Vijeo Citect V7.3 receives events transmitted by OFS and displays them in the SOE or in the list of alarms.

#### Wonderware WSP

A specific OFS V3.6 version dedicated to the Wonderware platform is available on the Wonderware Global Customer Support site.

The OFS-WSP driver has the same features as OPC V3.6 – Large apart from the following:

- It is licensed from a Wonderware environment only. It cannot be run outside a Wonderware environment
- It contains the server, the simulator, a sample client, configuration tool, configuration manager, and a user manual
- It is OPC DA compatible only (No OPC UA – No OPC XML)



Example of a time stamping architecture

Performance		
Performance	Event source module	Value
Between two identical source modules in the same rack	BMXERT1604T	1.6 < resolution < 3.3 ms
	BM•CRA31210	10 ms
Between two different inputs in the same source module	BMXERT1604T	1 ms
	BM•CRA31210	1 scan
Maximum number of events scanned	BMXERT1604T	400 events (1)
	BM•CRA31210	2,048 events (1)
Maximum number of I/O and memory available	BMXERT1604T	16 discrete inputs on module 512 events in internal buffer
	BM•CRA31210	256 discrete I/O configured 4,000 events in internal buffer
Maximum number of source modules in an Ethernet remote drop	BM•CRA31210	1 per drop
	BMXERT●●●●	9 per drop
Maximum number of event sources controlled	BMXERT●●●●	500 sources per second (1)

(1) This maximum value is not an absolute value. It depends on the overall system dynamics (total number of scanned items and number of events generated by the system).

#		
110XCA28201	1/25	TSXCRJMD25 1/25
110XCA28202	1/25	TSXCUSB485 1/25
110XCA28203	1/25	TSXPCX1031 1/25
990NAA26320	1/25	
990NAA26350	1/25	
<b>B</b>		
BMXXCAUSBH018	1/25	
BMXXCAUSBH045	1/25	
<b>C</b>		
CEXADSCZZEPMZZ	1/24	
CEXADSCZZGPMZZ	1/24	
CEXADSCZZSPMZZ	1/24	
CEXADSCZZTPMZZ	1/24	
CEXPACKAGEV14	1/20	
CEXSPSCZXEPMZZ	1/24	
CEXSPSCZXGPMZZ	1/24	
CEXSPSCZXSPMZZ	1/24	
CEXSPSCZXTPMZZ	1/24	
CEXSPSEZXEPMZZ	1/24	
CEXSPUCZLGPMZZ	1/22	
CEXSPUCZLSPMZZ	1/22	
CEXSPUCZLTPMZZ	1/22	
CEXSPUCZSGPMZZ	1/21	
CEXSPUCZSSPMZZ	1/21	
CEXSPUCZSTPMZZ	1/21	
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CEXUPNCZLTPMZZ	1/22	
CEXUPNCZSGPMZZ	1/21	
CEXUPNCZSTPMZZ	1/21	
CEXUPNCZXGPMZZ	1/23	
CEXUPNCZXTPMZZ	1/23	
<b>S</b>		
SR2CBL06	1/25	
STBXCA4002	1/25	
<b>T</b>		
TCSWAAC13FB	1/25	
TLXCDLFOFS36	3/7	
TLXCDLTOFS36	3/7	
TLXCDLUOFS36	3/7	
TLXCDSTOFS36	3/7	
TLXCDSUOFS36	3/7	
TLXCDUPDLOFS	3/7	
TLXCDUPDISOFS	3/7	



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