

RcWare Vision

Setup guide



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2 Setup

2.1 Prerequisites

A personal computer with minimum 800 MHz, 512 MB RAM, 40 GB HDD. More computing power may be necessary depending on the number of datapoints integrated and other services which require system resources, such as OPC server, IIS server, etc.

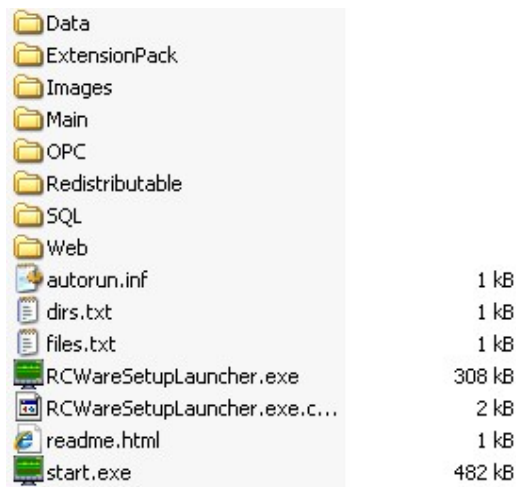
Recommended configuration for middle-ranged projects (3000 – 4000 variables) is 1.6 GHz, 1 GB RAM, 120 GB HDD. When using OPC server for 3rd party integration, it may be necessary to increase RAM up to 2 to 4 GB.

Microsoft Windows 2000, Windows XP, Windows 7, 8, 10 operating system. Use Windows Professional versions if web server is required: e.g. IIS is part of the Windows XP Professional installation.

Microsoft .NET V1.1 or .NET 4 must be installed first. The redistributable package of .NET 1.1 is supplied with the installation in the *Redistributable* folder.

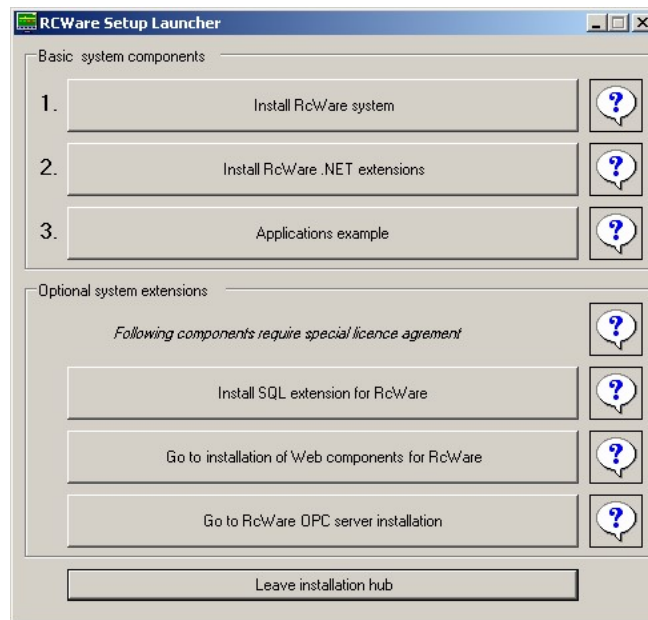
2.2 Installation

At the setup CD, there are following files and folders:



Data	
ExtensionPack	
Images	
Main	
OPC	
Redistributable	
SQL	
Web	
autorun.inf	1 kB
dirs.txt	1 kB
files.txt	1 kB
RCWareSetupLauncher.exe	308 kB
RCWareSetupLauncher.exe.c...	2 kB
readme.html	1 kB
start.exe	482 kB

Run **start.exe** to launch setup.

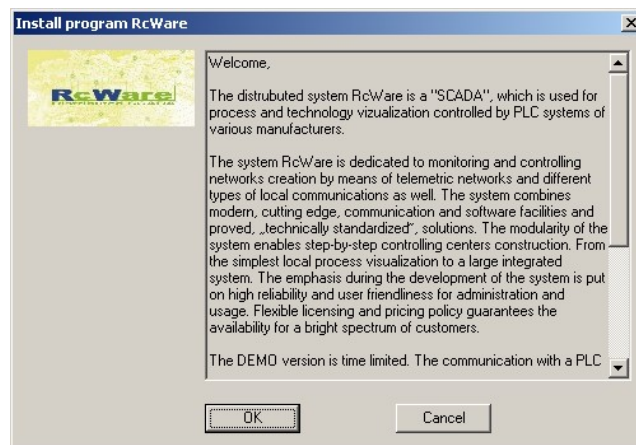


The Setup Launcher windows contains buttons which launch installers of all the necessary RcWare Vision components.

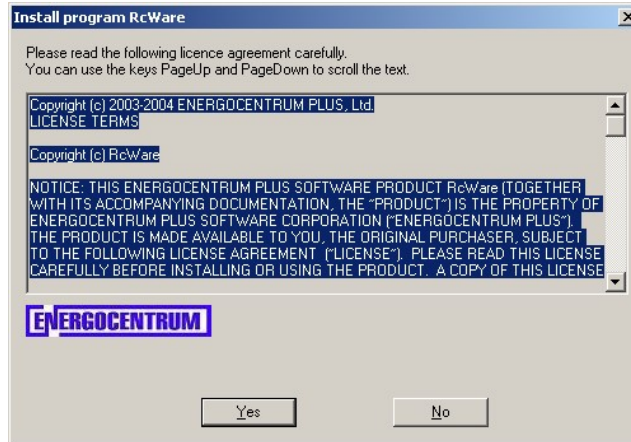
2.3 Basic components

First, install the basic system components.

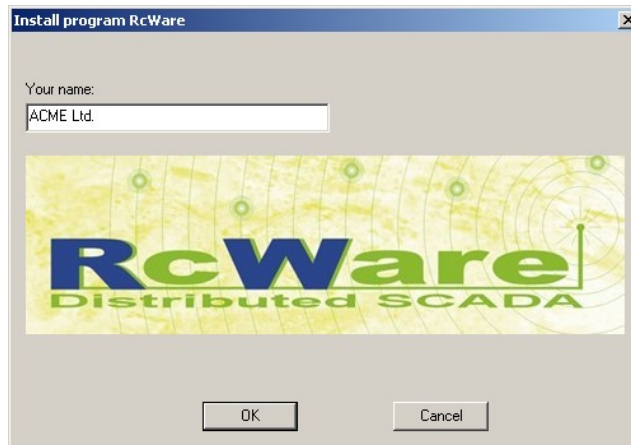
1. Click *Install RcWare System*.
2. Click OK for the welcome screen.



3. Click OK to confirm the licence agreement.

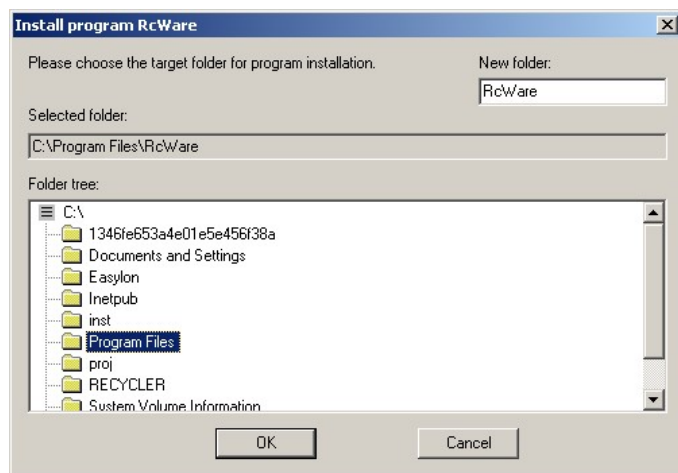


4. Enter your name – it will appear in the About window of the program. Click OK.



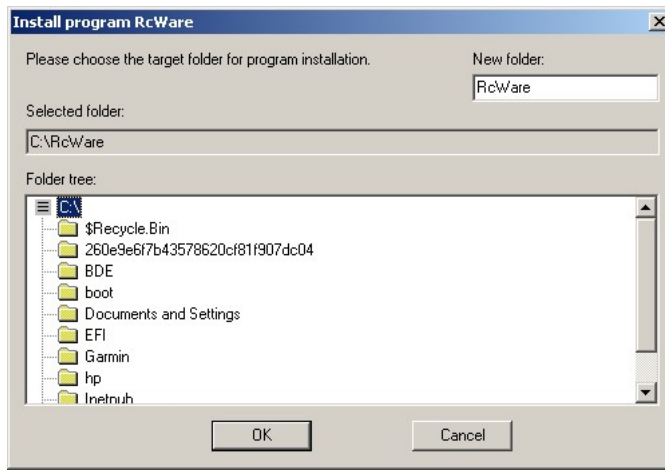
5. Select the target folder for installation.

Default for Windows XP and older is C:\Program Files\RcWare.



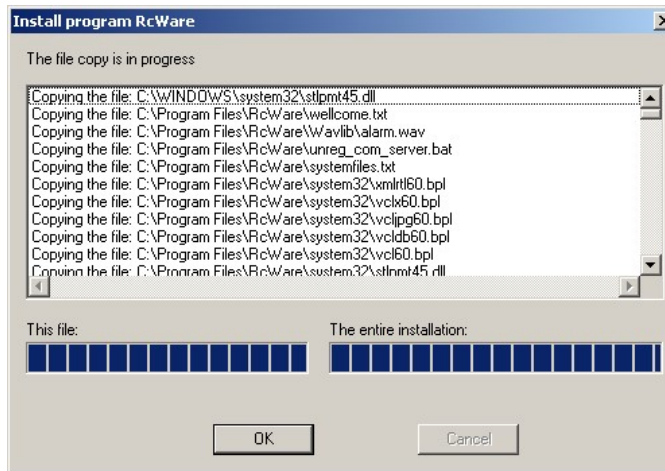
Installation folder for Windows XP and older

**Use another folder than *Program Files* for Windows 7 and above!
E.g. c:\RcWare:**

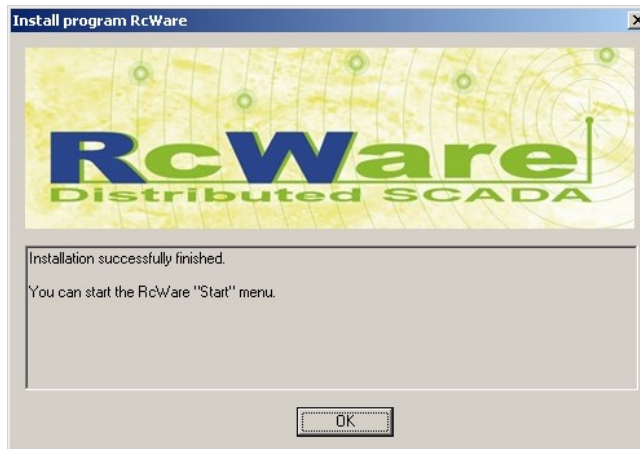


Installation folder for Windows 7 and newer

Files are copied into the destination folders. After copying, click OK to confirm.



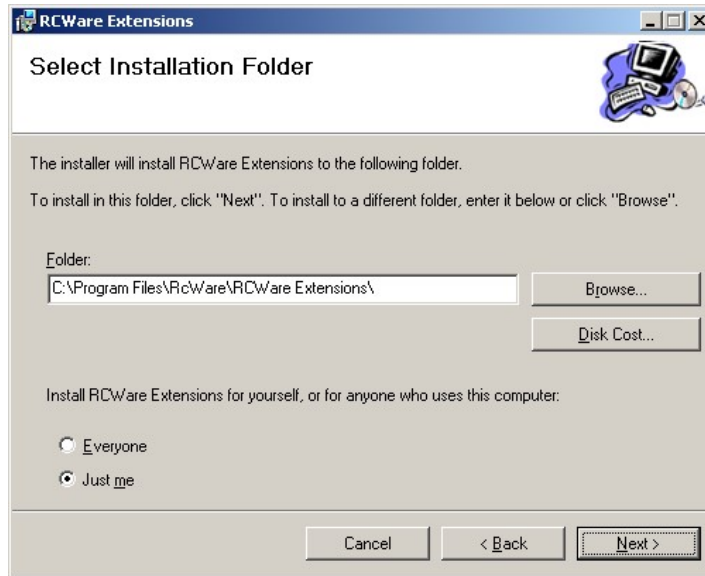
6. Installation is complete. Confirm by clicking the OK buttons.



2.4 .NET extensions

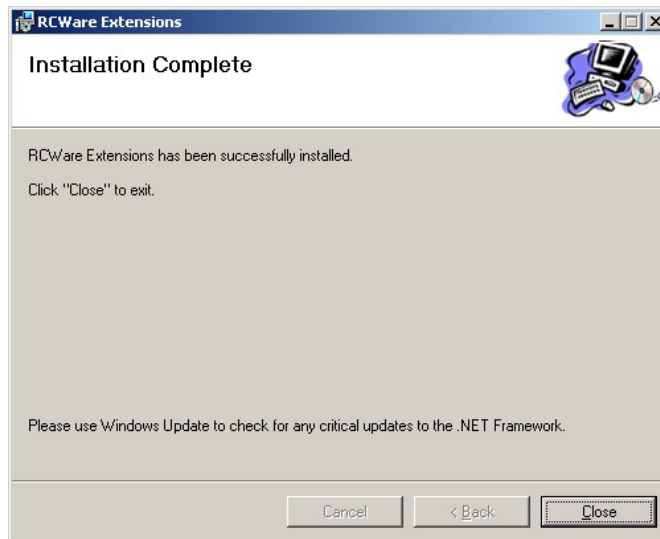
Second step is to install the .NET extensions. They provide extended functionality to the system.

1. In the Setup launcher, click *Install RcWare .NET Extensions*.
2. Click **Next** at the welcome screen.
3. Select *Everyone* or *Just me* to specify the installation properties. Note that this choice must be the same if reinstalling or updating the .NET extensions. Failing to do so, the .NET extensions update functionality may not be correct (some functions will not be updated).



Confirm by clicking **Next**.

4. Click **Next** to start the installation. RcWare .NET extensions is being installed.
5. After successful installation, click Close to confirm and exit the installer.



6. Confirm the Install successful window.



7. **Remember to install the latest hotfix** according to your .NET version:

- hotfix for .NET 1.1 with Windows XP and older
- hotfix for .NET 4 with Windows 7 and higher.

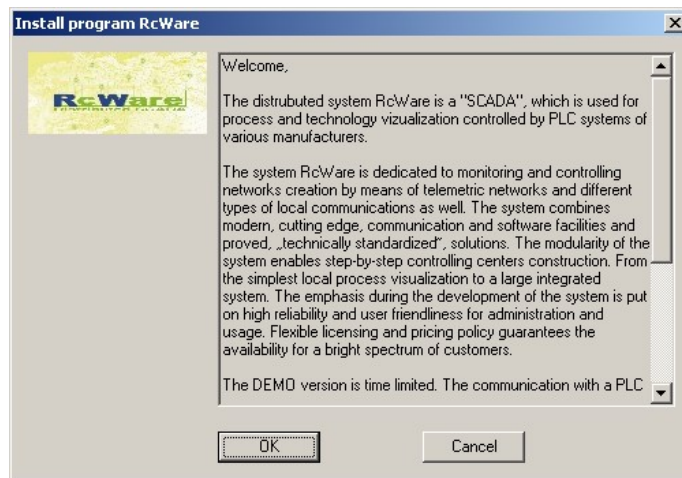
See below.

2.5 Applications examples

If this is your first-time installation, you may want to install the sample project, too. This is a good way how to test your graphics page displays, switching between the windows, and other functions. Do not install the application examples if you do not want to have the demo projects available, e.g. at the customer's PC.

To install the demo project:

1. Click the *Applications example* button.



2. Click OK to confirm.
3. Click Yes to confirm the licence agreement.
4. Enter your name as in the previous steps.
5. Select the target folder. It is recommended to keep the defaults.
6. Click OK to confirm the installation.
7. Confirm the INSTALLATION_SUCCESSFULL window.

2.6 Optional system extensions

If necessary, optional system extensions may be installed. However, for the basic function they are not necessary. Optional system extensions may also be installed at a later time.

The optional extensions are subject to special licences – see Product overview and Pricelist.

2.6.1 SQL Extension

Only necessary if a 3rd party is supposed to share the trend data over SQL. Do not install for standard trend functionality. The trend data is normally stored as files in the project directory. With the SQL Extension, the trend data is written into a SQL database.

2.6.2 Web components

With Web components installed, the RcWare Vision provides data to the IIS (Internet Information Server) and enables web access to the plant graphics. For proper functionality, Internet Information Server must be installed prior to installation of Web Components.

2.6.3 RcWare OPC Server

RcWare Vision is able to provide data to a 3rd party SCADA system over the OPC interface. The OPC Server licence must be installed separately. (The OPC client functionality – RcWare Vision reads data from 3rd party OPC server(s) - is not affected by this installation and is available even without the OPC Server extension.)

After installing all necessary components, leave the installation hub.

2.7 Licence

When purchasing RcWare Vision, you receive two files containing licence information. Copy the licence files to the RcWare folder (default is C:\Program Files\RcWare).

The files are:

RcWare.lic.sig – signature file with encoded licence information

[licence_name].txt – text file with licence number, user name, distributor name and date of creation. This is only an information file and it is not necessary for the licence to be operational.

Without valid licence files, the RcWare Vision functionality will be limited:

- communication stops after 20 mins
- the Port Monitor function is not available.

However, it is possible to engineer projects, save data, test communication with the process level etc.

The licence name appears in the upper program bar.

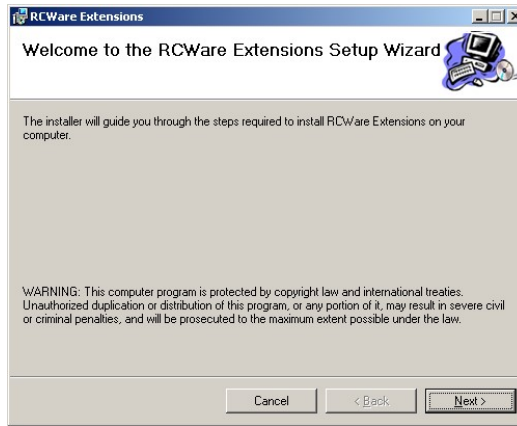
2.8 Hotfix installation

Next step is to install the **hotfix**. Hotfix is a cumulative pack of updates which should be installed after each basic installation. Always use the latest hotfix released; it contains the new communication drivers and functions.

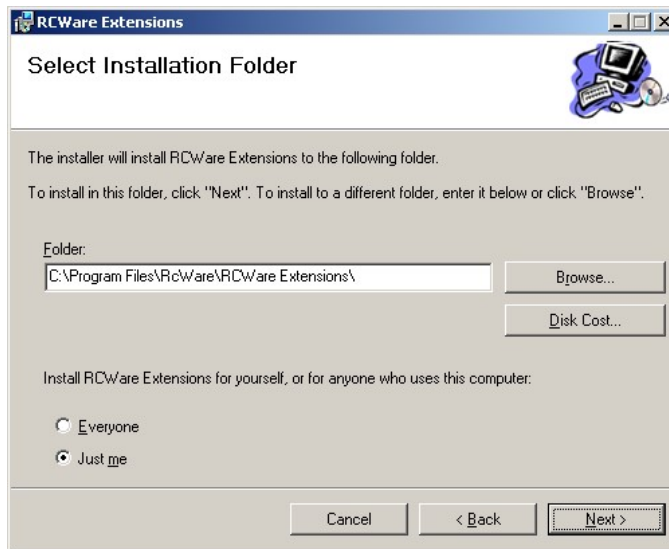
When contacting technical support, have your hotfix version number ready. It is stated in the *About...* window in RcWare Vision.

The latest hotfix is ready for download at www.domat.cz.

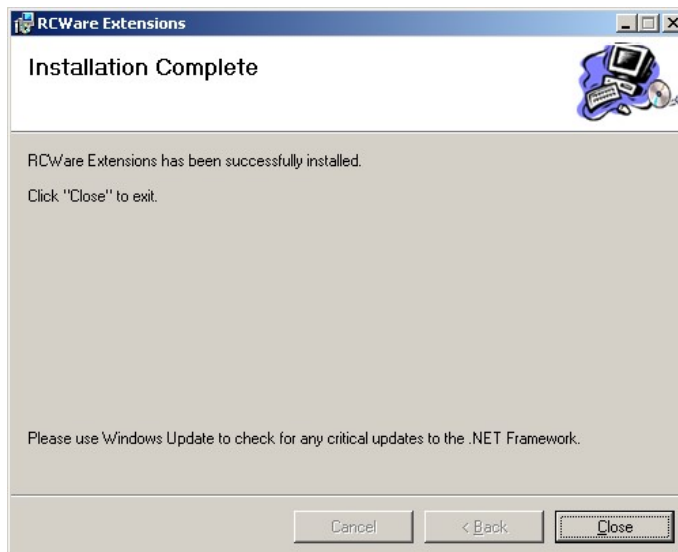
1. Run **hotfix.exe**.



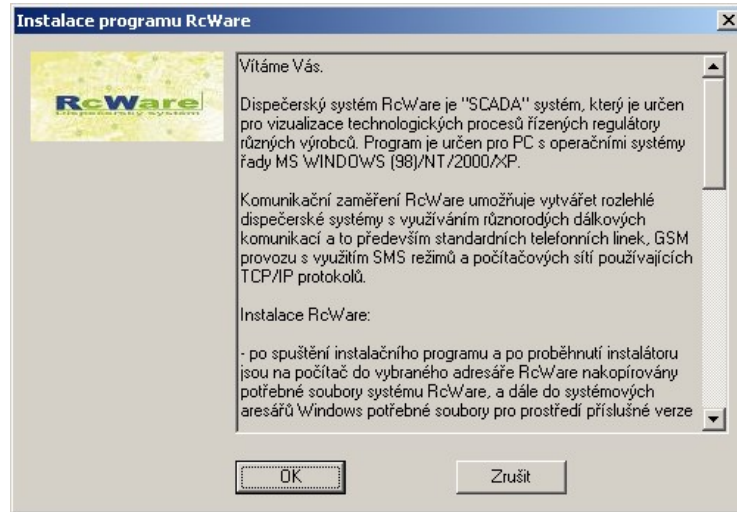
2. Click Next.
3. Select *Everyone* or *Just me* to specify the installation properties. Note that this choice must be the same as for the basic components installation. Failing to do so, the .NET extensions update functionality may not be correct (some functions will not be updated).



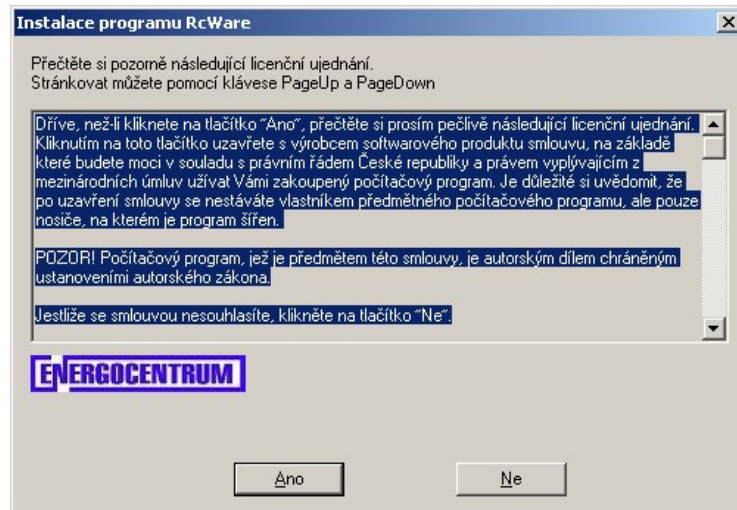
4. Click *Next* to continue and *Next* to start the extension hotfix installation.
5. Click *Close* to confirm the successful installation.



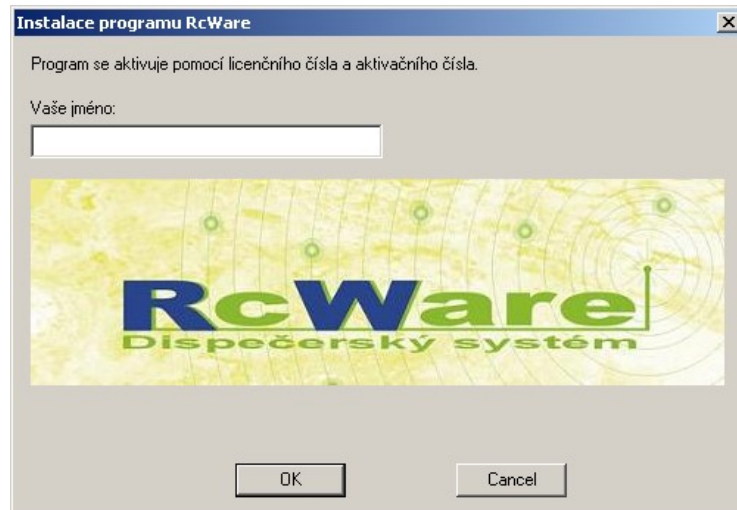
6. Click OK to confirm the installation of basic hotfix.



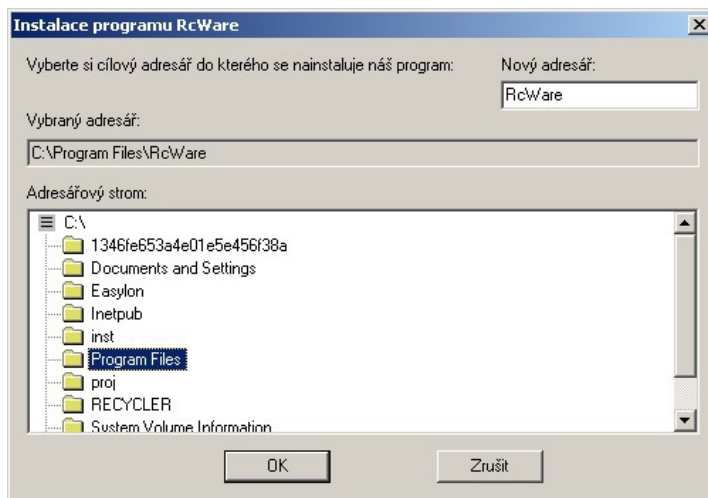
7. Click Yes to confirm the licence agreement.



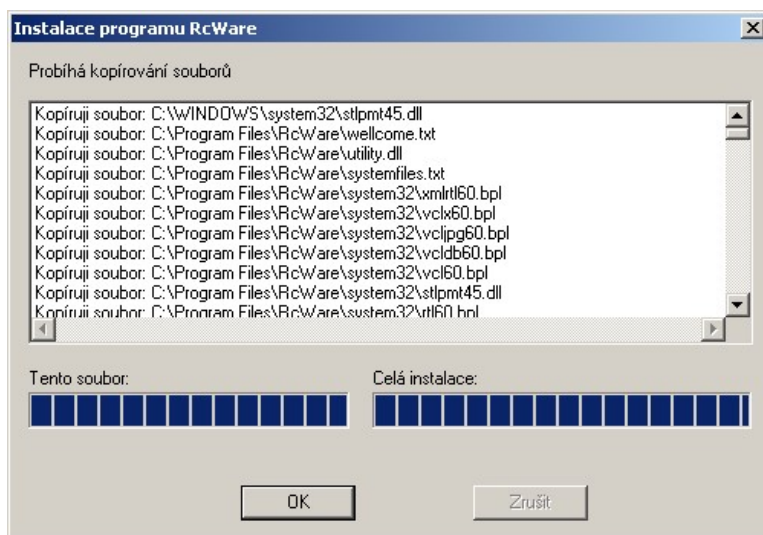
8. It is not necessary to enter the name for the second time. Just click OK.



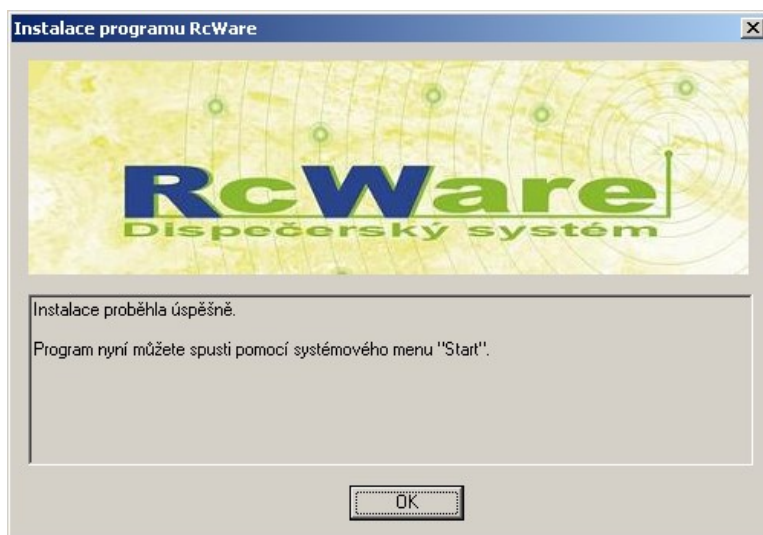
9. Select the same target directory as for the basic installation. Remember that if the default folder may not fit your existing installation folder, you have to specify the correct one.



10. Drivers and updates are copied. After finishing, click OK to confirm.



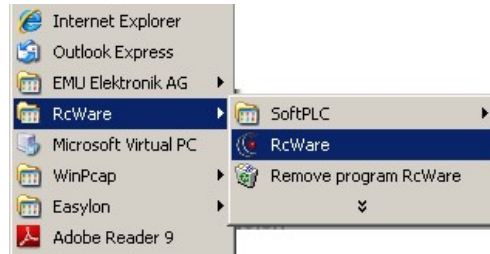
11. Click OK to exit the installer.



The installation is now complete.

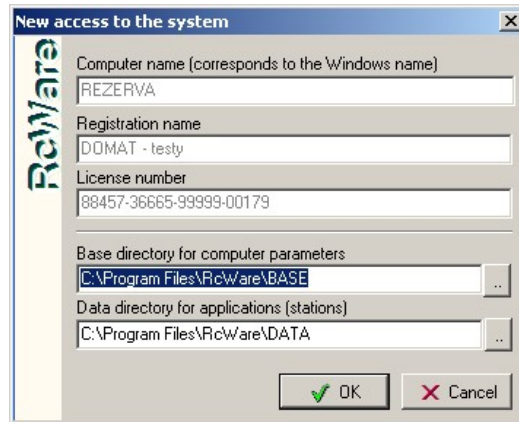
3 Running RcWare Vision for the first time

Run the RcWare Vision: **Start menu – Programs – RcWare – RcWare.**



When RcWare Vision is run for the first time, it is necessary to specify

- folder for setting parameters (such as communication channels, hardware profiles, user privileges etc.) (BASE) and
- folder where projects and trends are stored (DATA).



It is recommended to keep the default folders.

In case that the system (installation) has to be strictly separated from configuration and data, e.g. when the data folders are backed up automatically, use different folders than the default ones.

Click OK to confirm the settings.

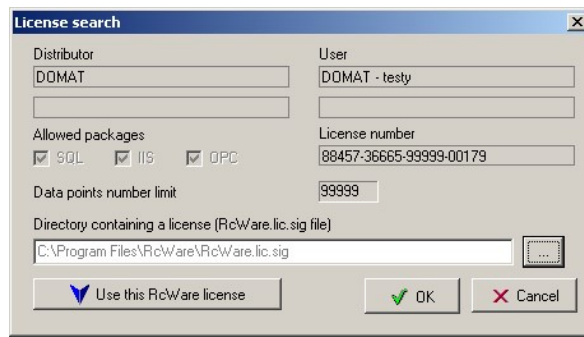
The next window is admin password which may be changed here.



The default admin password is **rw**.

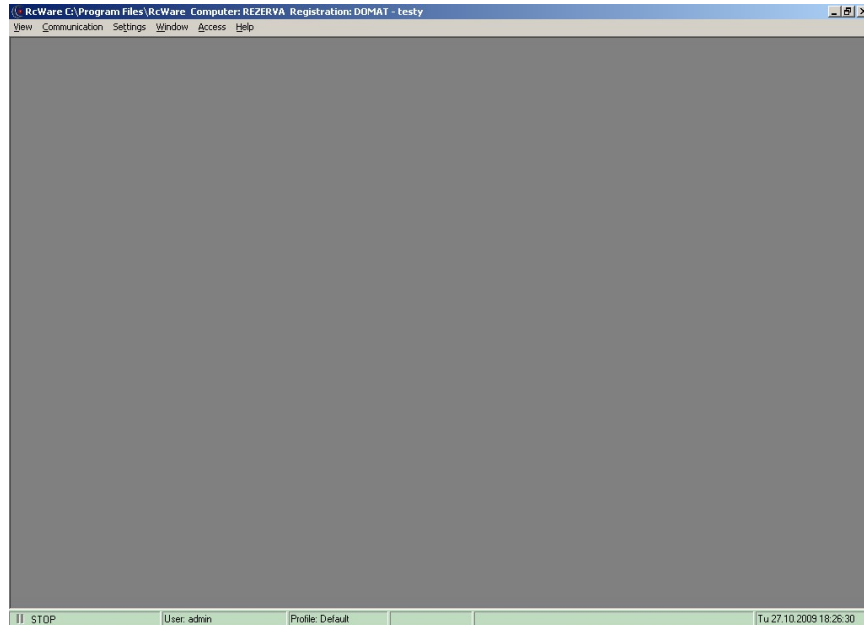
Click OK to confirm.

The next window is licence selector.



Select the licence file which you received. Then click the button "Use this RcWare licence".

The main program window opens.



4 Communication channel setup

The PC must be configured to fit your project(s). In the following part, the new station will be set up so as to communicate with a MiniPLC controller as an example.

At a RcWare Vision PC, there may be more projects active at the same time. Each project may be run or stopped independently of the other projects.

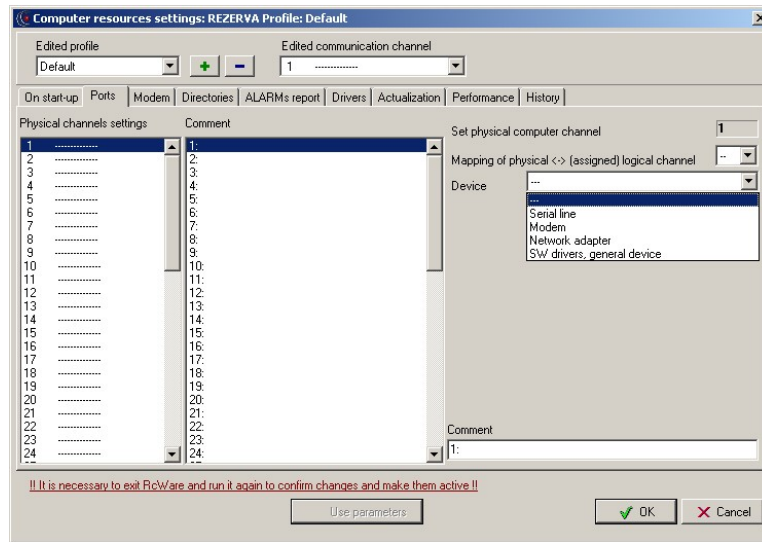
4.1 Communication channel topologies

The most important issue are *communication channels* or *ports*. Those are physical ways for the software drivers to communicate with the process stations and/or 3rd party devices.

A project may use more channels at a time – in a project there may be data from several channels, such as from more MiniPLC controllers, or metering buses together. The amount of channels in a project is not limited.

A channel must not be used by more than one project (database).

The channels are defined in the **Settings – PC Resources** menu, the **Ports** tab.



RcWare Vision supports up to 200 channels. Each channel may be defined as one of the following:

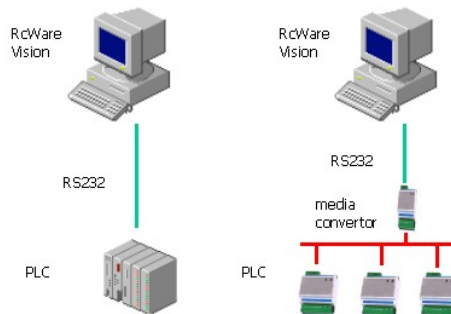
Serial line

The most common interface for PLCs and 3rd party devices. It is one of the PC's serial (COM) ports.

The connection follows either via a RS232 interface or through an interface convertor to RS485, RS422, M-Bus or another bus. Typical drivers are Modbus, Advantech, Unigr, and metering systems.

Multiple serial connection with RS232 to Ethernet convertors

There may be more serial channels at one RcWare Vision station, either hardware COM ports (native or add-on cards), or virtual COM ports over Ethernet e.g. by the Domat M020 converter.

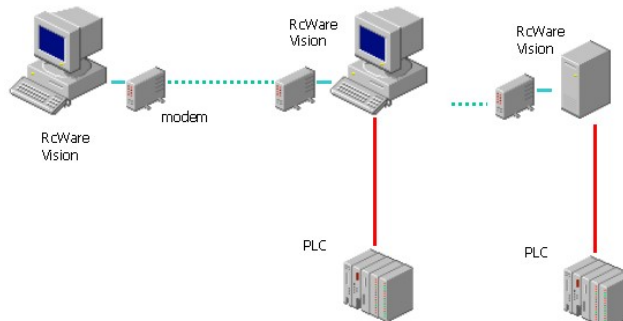


Modem

Modem is used for dial-up connection between the RcWare Vision stations.

Dial-up connection for remote plants. The RcWare Vision server installation may even be a „blind“ industrial PC which is particularly suitable for remote data acquisition and access, such as metering readouts and data trending and alarming.

Topology with dial-up modems

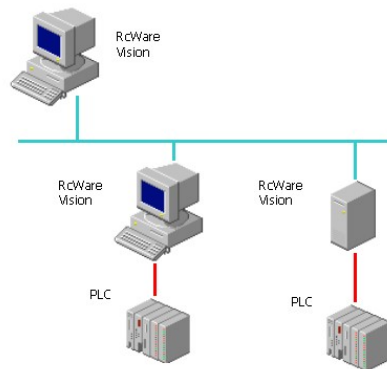


The server (slave) installations are able to dial-up alarms to the client (master) station. The master station can be configured so that it connects to the slaves in regular intervals, polls data and saves the sampled history files to the master database.

Network

Virtually the same as the Modem topology, but in a TCP/IP environment. The upper station is configured as Network station, accessing the other two stations.

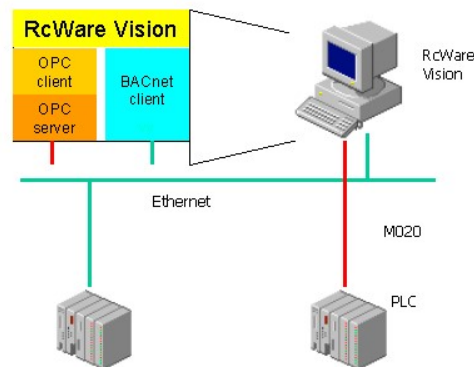
Topology with more stations in a network



Of course there may be more master stations, each of them having complete access to the entire network.

Software drivers

RcWare Vision can integrate subsystems not only via serial interfaces (COM ports), but also by means of network drivers for various communication standards, such as BACnet/UDP, Modbus/TCP, OPC, DDE, and SoftPLC Link (Domat Control System proprietary protocol to connect to a SoftPLC controller).



However, for 3rd party integration it is highly recommended to use a SoftPLC Runtime running on the SCADA PC as an interface between RcWare Vision and the 3rd party.

SoftPLC Link

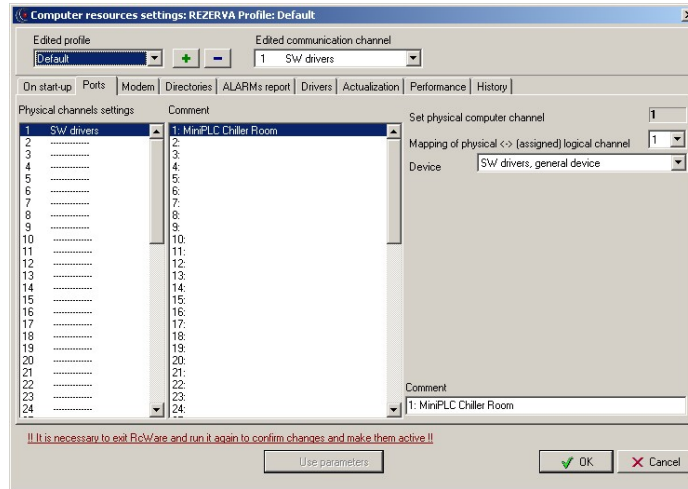
To connect SoftPLC and MiniPLC runtimes to RcWare Vision, the SoftPLC Link software driver is used.

Now, let's have a MiniPLC controller which shall be integrated into SCADA. A channel for connection to a SoftPLC or MiniPLC must be defined. Each runtime (Soft/MiniPLC controller) must have a separate channel for communication. Of course, all of them are communicating over the same Ethernet infrastructure.

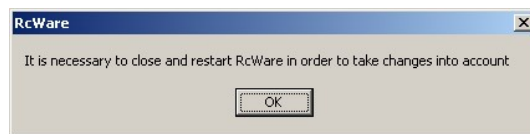
4.2 Channel setup

1. Go to **Settings – PC Resources – Ports**.
2. Select a channel in the left column.
3. Set the channel as *SW drivers, general device* in the right drop-down menu.
4. Add a comment in the right bottom box.

5. Click the *Use parameters* button. Click OK.



6. After each change in the PC Resources window, it is necessary to restart the RcWare Vision.



7. After restart, the channel is now ready for communication.

Note that for each Soft/MiniPLC, there must be a separate channel defined.

5 New project

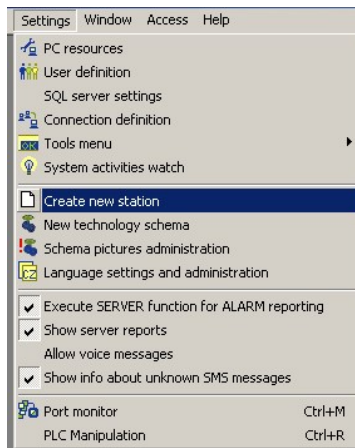
A project is basically a database of variables, scripts and other settings, which is stored in one database file (**[project_name].dtw**), and other project data, such as plant graphics, history data etc. All project data, which is

- database file (.dtw)
- database index file (.dtwx)
- last communicated variables values (.var)
- plant graphics (.sch)
- trend data (.txl)
- trend data templates (.atpl)
- heating curve templates (.eqt)

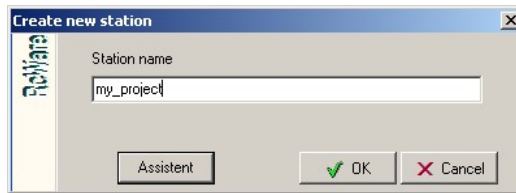
and other files, is stored in a folder named [project_name].

5.1 Creating a new SoftPLC project

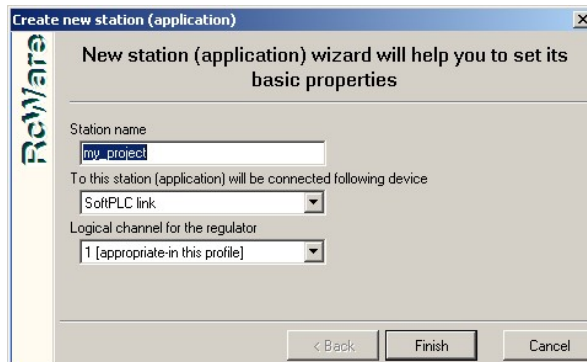
A new project is created in the *Settings* menu – *Create new station*.



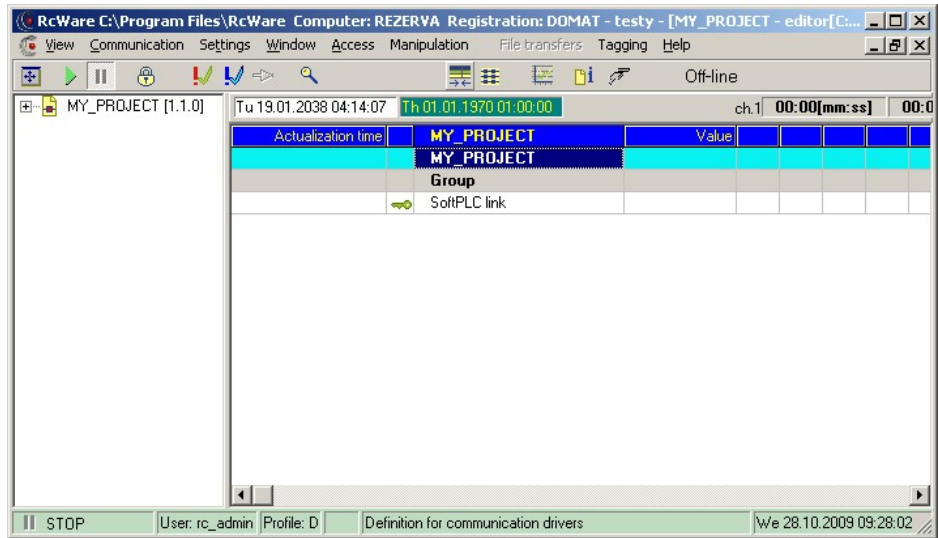
1. Enter the name of your new project. As this will be also the name of a folder, do not use special characters, spaces etc. All letters are capitalized automatically.



2. Use Assistent to be guided through all settings: Click the **Assistent** button.
3. Select the appropriate communication driver from the list of drivers. For SoftPLC / MiniPLC, this will be the *SoftPLC Link*.



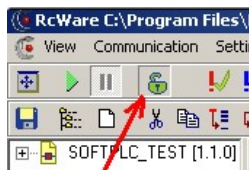
4. Select the logical channel (or port) for communication. The assistant shows if the channel is suitable for this communication driver, e.g. a *SW drivers, general device* driver is not suitable for M-Bus communication driver, which requires a serial line.
5. Click Finish to close the assistant. The data file opens.



This is a text view on the database. It is possible to define and import data points here, configure their properties, such as addresses, alarms, trending, texts etc. It only makes sense to create the graphic pages after the data file is engineered completely.

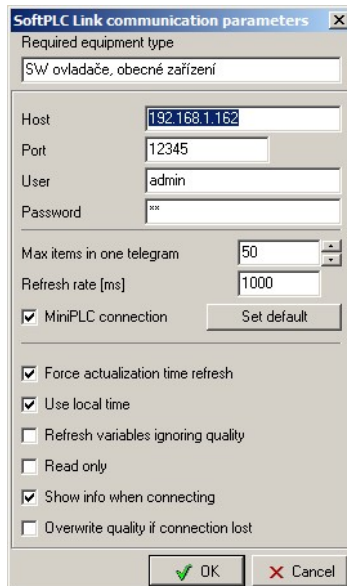
5.2 Setting the SoftPLC Link communication parameters

Unlock the data file by clicking the padlock icon



and double-click the SoftPLC link definition data point, which is marked with a yellow key.

Set the SoftPLC link communication parameters.



Host: IP address or computer name of the process station

Port: TCP port on which the SOftPLC runtime accepts connection, default is 12345

User: User name as defined in the runtime settings. Default is *admin*.

Password: Password as defined in the runtime settings. Default is *rw*.

Max items in one telegram: number of variables to be transmitted in one TCP packet. Reasonable values are 20...50 for broadband networks and LANs.

Refresh rate (ms): how often are the packets transmitted. 10 ms means that 100 packets per second are sent, each containing „Max items in one telegram“ variables, which gives $100 \cdot 20 = 2000$ variable updates per second in case of no packet loss. Change this value only in case of network problems or slow connection (GPRS).

MiniPLC connection: check if the target controller is a IPLC201, IPLC301, or MXPLC. Do not check if the target controller is a IPLC500, IPLC510, Windows runtime, or MXPLC with Linux extension (MXL).

Force actualization time refresh: if not checked, some values which do not change often (setpoints) may indicate timeouts. If checked, they are automatically polled and thus the time tag is up to date.

Use local time: if checked, the time stamps are dated according to the PLC time. Otherwise the time is the RcWare Vision PC time.

Refresh variables ignoring quality: if checked, the quality attribute does not influence the time tag. If not checked, variables with Bad Quality (mostly due to I/O bus or I/O module error) have obsolete time tag so that it is easy to see in SCADA that there is a problem.

Read only: if checked, the variables can not be written. The whole site is read-only. Use when a monitoring or parallel station is set up with read-only access regardless of the user access right settings.

Show info when connecting: If there are more sites in a project, establishing of all TCP connections may take up to several minutes. It is good for the user to see the reason of possible slow response of the program.

Overwrite quality if connection lost: in case of communication break, the quality attribute is overwritten to Bad. Makes sense only if a datapoint is defined as a Quality datapoint.

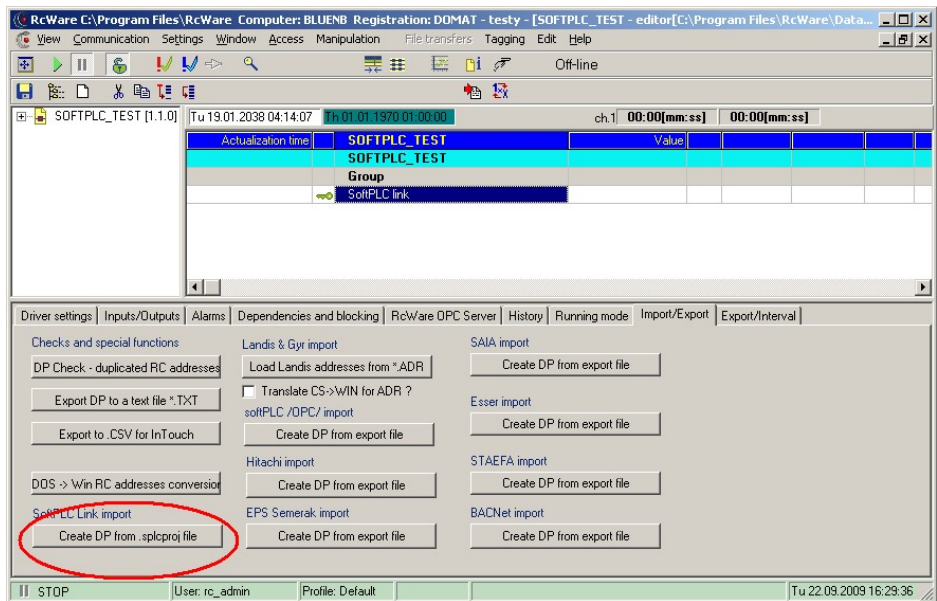
5.3 Import of data points from the SoftPLC project

It is highly recommended that in the SoftPLC project, the variables which have to be imported in SCADA are marked as **OPC**:

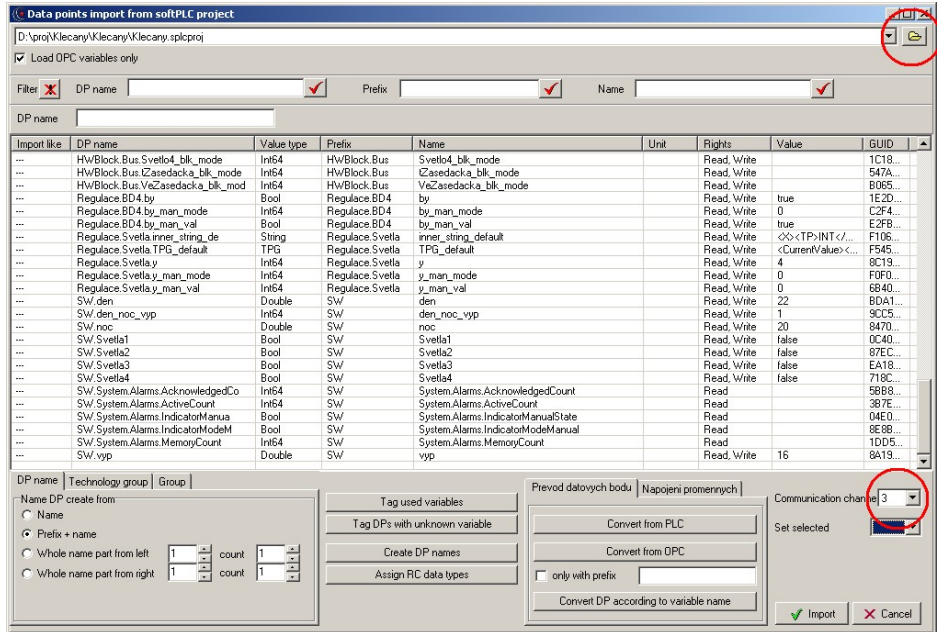
HW		Regulace		Variables					
<input type="checkbox"/>	OPC	Name prefix	Name	Value	Unit	Type	UpdateTime		
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Regulace	Svetla.y	4		Int16	10.08.2009 10:36:46.156		
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Regulace	Svetla.y_man_mode	0		Int16	06.07.2008 11:39:10.218		
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Regulace	Svetla.y_man_val	0		Int16	06.07.2008 11:39:10.218		
<input type="checkbox"/>	<input checked="" type="checkbox"/>	SW	Svetla1	false		Bool...	11.11.2008 15:22:12.467		
<input type="checkbox"/>	<input checked="" type="checkbox"/>	SW	Svetla2	false		Bool...	24.10.2008 13:45:43.669		
<input type="checkbox"/>	<input checked="" type="checkbox"/>	SW	Svetla3	false		Bool...	24.10.2008 13:45:44.050		
<input type="checkbox"/>	<input checked="" type="checkbox"/>	SW	Svetla4	false		Bool...	24.10.2008 13:45:44.420		
<input type="checkbox"/>	<input checked="" type="checkbox"/>	SW	System.Alarms.Acknow...	0		Int16	22.09.2009 16:25:14.359		
<input type="checkbox"/>	<input checked="" type="checkbox"/>	SW	System.Alarms.ActiveC...	0		Int16	22.09.2009 16:25:14.359		
<input type="checkbox"/>	<input checked="" type="checkbox"/>	SW	System.Alarms.Indicato...	false		Bool...	22.09.2009 16:25:14.359		
<input type="checkbox"/>	<input checked="" type="checkbox"/>	SW	System.Alarms.Indicato...	false		Bool...	22.09.2009 16:25:14.359		
<input type="checkbox"/>	<input checked="" type="checkbox"/>	SW	System.Alarms.Memor...	0		Int16	22.09.2009 16:25:14.359		
<input type="checkbox"/>	<input type="checkbox"/>	SW	System.RTC	22.09.2009...		Date...	22.09.2009 16:25:14.328		
<input type="checkbox"/>	<input type="checkbox"/>	SW	System.RTCDaylight	false		Bool...	22.09.2009 16:25:14.359		
<input type="checkbox"/>	<input type="checkbox"/>	SW	System.RTUTCUTC	22.09.2009...		Date...	22.09.2009 16:25:14.328		
<input type="checkbox"/>	<input type="checkbox"/>	SW	System.SoftPLCProxy...	-2		Int16	22.09.2009 16:25:14.359		
<input type="checkbox"/>	<input type="checkbox"/>	SW	System.StopAllowed	false		Bool...	22.09.2009 16:25:14.359		
<input type="checkbox"/>	<input type="checkbox"/>	SW	System.StopRequest	false		Bool...	22.09.2009 16:25:14.359		
<input type="checkbox"/>	<input type="checkbox"/>	SW	System.WaitForApplica...	false		Bool...	22.09.2009 16:25:14.359		
<input type="checkbox"/>	<input checked="" type="checkbox"/>	SW	vyp	16		Doub...	08.01.2009 13:58:43.982		
<input type="checkbox"/>	<input type="checkbox"/>	Regulace	Vyp.by	false		Bool...	10.08.2009 10:36:46.156		

This makes the import easier because it is not necessary to select only the variables to be imported from the whole set of variables.

Go to the **Import/Export** tab and click the *SoftPLC Link Import* button.



In the import dialogue,



- select the `.splcproj` file which contains your SoftPLC project
- select the communication channel which should this SoftPLC runtime use

Then click the *Assign RC data types* button. The appropriate data types are automatically selected. The Int64 types are imported as multistate values (digital inputs); check if this is correct for all the Int64 datapoints and correct if some of them should import as analogue values (eg. counted values).

How to change the data type

- click the line with the datapoint for which you want to change the data type
- press the Spacebar key several times until the datapoint type matches the data type you want.

This can be done for more points at a time: hold Ctrl and select datapoints by clicking their lines.

DO	SW.Svetla2	Bool
DO	SW.Svetla3	Bool
DO	SW.Svetla4	Bool
AI	SW.System.Alarms.AcknowledgedCo	Int64
AI	SW.System.Alarms.ActiveCount	Int64
---	SW.System.Alarms.IndicatorManua	Bool
---	SW.System.Alarms.IndicatorModeM	Bool
AI	SW.System.Alarms.MemoryCount	Int64
AO	SW.vyp	Double

Number of system alarms is a good example of a datapoint which should be analogue value (integer) rather than multistate value.

Available data types

The available data types are:

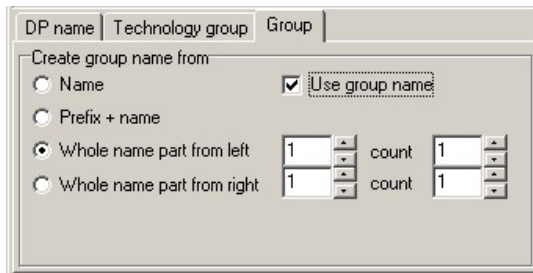
- AI** analogue input (read-only value), either integer or double precision
- AO** analogue output (read / write value), either integer or double precision
- TPG** time programme (scheduler)
- TIM_PC** real time of the process station
- SEL** special import, see below
- datapoint not imported
- DI** digital input, binary or multistate, read-only
- DO** digital output, binary or multistate, read / write

Special import: for advanced users. Tag an existing datapoint in the data file prior to opening the import dialogue. All datapoints marked as SEL will be imported in the same configuration as this tagged datapoint has, with the imported variable address assigned to the interface No. 0 of the RcWare Vision data point. This is used when non-standard data points are defined in RcWare Vision.

Separating into groups

To separate the datapoints into groups according to the SoftPLC project schemas, proceed as follows:

- select the *Group* tab
- select *Whole name part from left*
- check *Use group name*

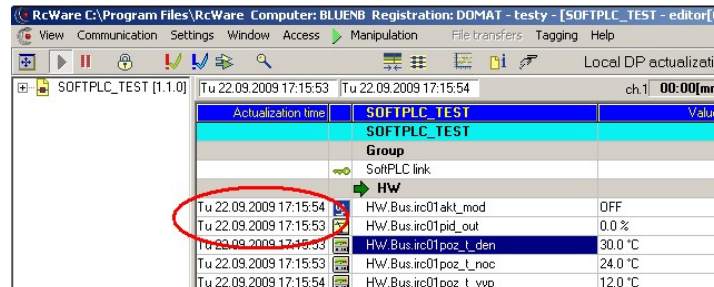


Finally, click *Import*.

This is the easiest way how to get the datapoints into the RcWare Vision data file. However, it might be necessary to change or redefine some of those.

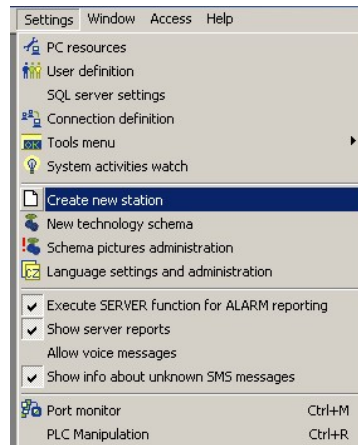
Save and lock the data file.

Run the communication. The data points should update.

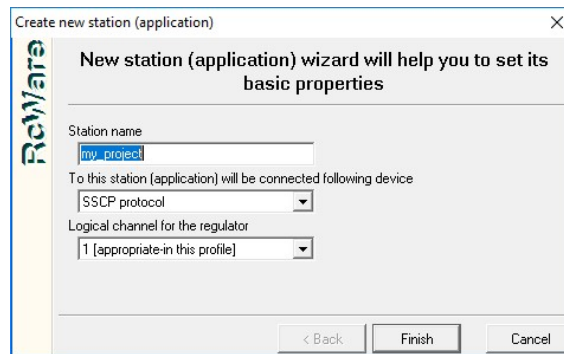


5.4 Creating a new Merbon project

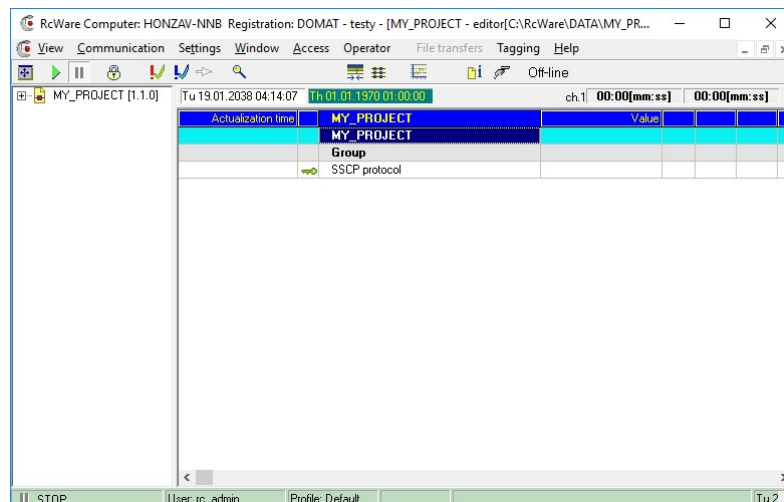
The first steps are equal to those for a SoftPLC project. A new project is created in the *Settings* menu – *Create new station*.



6. Enter the name of your new project. As this will be also the name of a folder, do not use special characters, spaces etc. All letters are capitalized automatically.



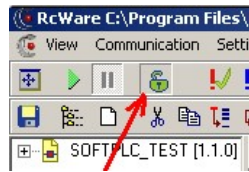
7. Select the appropriate communication driver from the list of drivers. For mark... PLCs, use *SSCP protocol*.
8. Select the logical channel (or port) for communication. The assistant shows if the channel is suitable for this communication driver, e.g. a *SW drivers, general device* driver is not suitable for M-Bus communication driver, which requires a serial line.
9. Click Finish to close the assistant. The data file opens.



This is a text view on the database. It is possible to define and import data points here, configure their properties, such as addresses, alarms, trending, texts etc. It only makes sense to create the graphic pages after the data file is engineered completely.

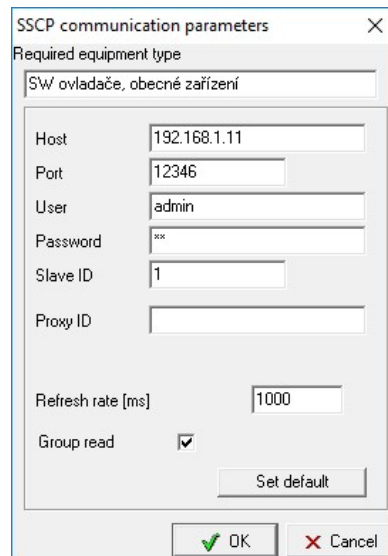
5.5 Setting the Merbon communication parameters

Unlock the data file by clicking the padlock icon



and double-click the SSCP protocol definition data point, which is marked with a yellow key.

Set the SSCP communication parameters.



Host: IP address or computer name of the mark... PLC

Port: TCP port on which the PLC accepts connection, default is 12346

User: User name as defined in the PLC settings. Default is *admin*.

Password: Password as defined in the PLC settings. Default is *rw*.

Slave ID: the SSCP link address (used mainly in SSCP over RS485 communication, but must be set also when connecting over IP). See definition in the PLC settings, default is 1.

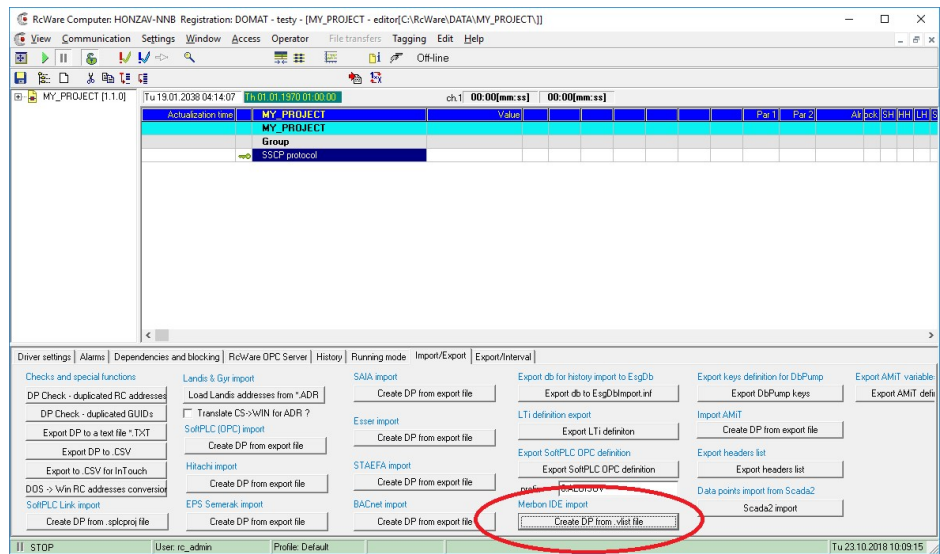
Proxy ID: not used in this version.

Refresh rate (ms): how often are the packets transmitted. 1000 ms means that every second a packet is sent, containing one or more variables. Change this value if necessary to control the data throughput at connections with limited broadband (GPRS).

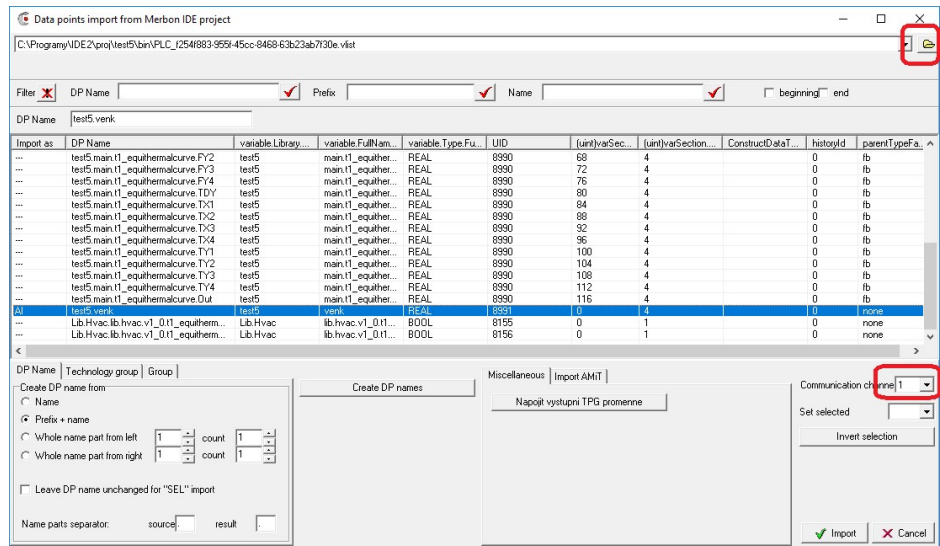
Group read: if checked, multiple datapoints are read in one packet, which makes the communication more efficient.

5.6 Import of data points from the Merbon project

Go to the **Import/Export** tab and click the *Merbon IDE Import* button.



In the import dialogue,



- select the `.vlist` file which contains your Merbon project variables. There are two `...vlist` files in the `\bin` directory of your Merbon project which have different character coding. Use the `...utf8` file if you experience problems with special characters
- select the communication channel which should be used to connect to this Merbon PLC
- use Shift or Ctrl and click or arrows to focus one or more variables which should be imported as datapoints of the same type (AI, AO, DI, DO, TPG... - see below)
- press the Spacebar key several times until the datapoint type matches the data type you want.

Available data types

The available data types are:

- AI** analogue input (read-only value), any real or any integer
- AO** analogue output (read / write value), any real or any integer
- TPG** time programme (scheduler)
- TIM_PC** real time of the process station
- SEL** special import, see below
- datapoint not imported
- DI** digital input, binary or multistate, read-only
- DO** digital output, binary or multistate, read / write

Special import: for advanced users. Tag an existing datapoint in the data file prior to opening the import dialogue. All datapoints marked as SEL will be imported in the same configuration as this tagged datapoint has, with the imported variable address assigned to the interface No. 0 of the RcWare Vision data point. This is used when non-standard data points are defined in RcWare Vision.

Special data types

Import of Time Scheduler:

Use the `...base.TpgValue` variable to map to the RcWare TPG data point.

...	test5.main.t17_boolean_scheduler.base.en	test5	main.t17_boolea...
TPG	test5.main.t17_boolean_scheduler.base.TpgValue	test5	main.t17_boolea...
...	test5.main.t17_boolean_scheduler.base.TpgValue.[0]	test5	main.t17_boolea...
...	test5.main.t17_boolean_scheduler.base.TpgValue.[0].StartTime	test5	main.t17_boolea...

Import of alarms:

Alarms are imported as script datapoints. Use the `...AlrStatus` variable of the Merbon BD... alarm block to map the RcWare alarm script datapoint. The scripts are available in the Merbon Sample Project which can be requested at support@domat.cz.

The import dialogue is not used for import of alarms.

- copy the script datapoint from the Merbon Sample Project to your project
- rename the datapoint so as to fit your alarm datapoint
- assign the Merbon `...AlrStatus` variable by clicking the datapoint and editing the **Data address** position at **line 0**:

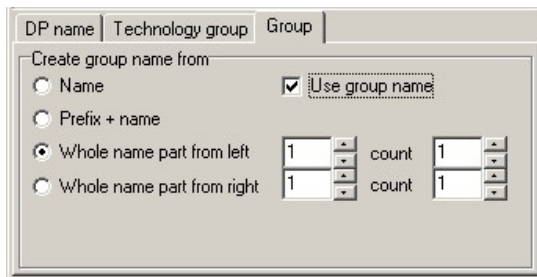
The screenshot shows the 'Input, output and script edit: Alr nizka_tep1_TV' window. A table lists various datapoints with columns for 'nr.', 'Description', 'I/O value type', 'Dir. type', 'Data source - driver', 'Data address', 'Value', 'Parameter 1', and 'Parameter 2'. The 'Data address' column for row 3 is circled in red. Overlaid on this is the 'SSCP parameters' dialog box. In this dialog, the 'Name' field is 'test5.main.bd56_singlealarmmemorydelay.AlrStatus', with 'AlrStatus' circled in red. The 'Channel' dropdown is set to '1'. Below the dialog box, a file tree shows the project structure, with 'AlrStatus' highlighted in blue and circled in red.

Remember to check the channel number of the script data point.

Separating into groups

To separate the datapoints into groups according to the Merbon project schemas, proceed as follows:

- select the *Group* tab
- select *Whole name part from left*
- check *Use group name*

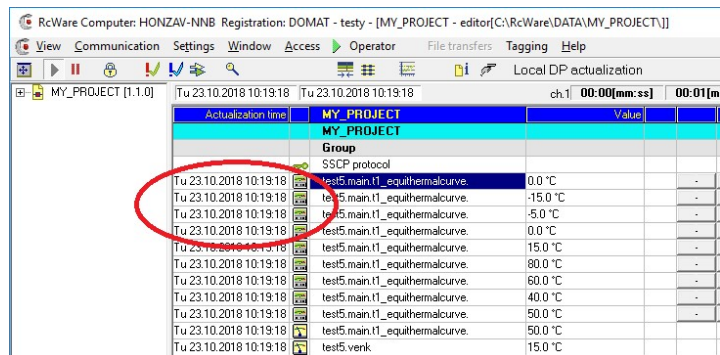


Finally, click *Import*.

This is the easiest way how to get the datapoints into the RcWare Vision data file. However, it might be necessary to change or redefine some of those.

Save and lock the data file.

Run the communication. The data points should update.



6 Data point editor

In the data point editor, the datapoints in the database, their communication properties, scripts, alarms, trends etc. are defined.

It is not necessary to have the data point editor window open when a project is running, just make sure that the project is running and communication is working properly - this is indicated by the green / blue flashing triangle in the status bar.



7 Trends

7.1 Trend types

Next, we will define trending for selected datapoints. Trended datapoint values are stored in monthly text files by default.

There are two types of trending:

- Synchronous saving (all datapoints are stored in the same time intervals)
- Asynchronous saving (datapoints are saved if their value changes or at minimum recording interval if the value is not changing)

In the next paragraphs, we focus on synchronous saving which is suitable for systems up to several thousands of trended datapoints.

Synchronous saving may be defined as

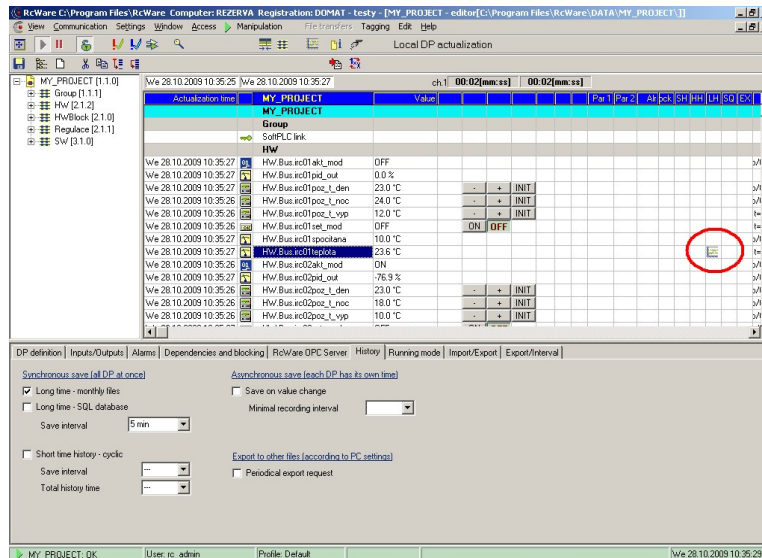
- Long time – the data is stored permanently depending on the capacity of the hard disk
- Short time – the data is stored for a certain time period only, typically a day or a week, and then it is overwritten by new data. This saves storage space.

It is possible to combine both Long time and Short time trending within a project. Then, for the Short time period, eg. 1 week, the data will be available with Short time save interval, eg. 1 min., while for the rest of time the values will be kept with Long time save interval, eg. 5 mins. This is useful for problem diagnostics (where shorter sampling intervals are required), and long-time evaluation for energy management purposes at the same time.

7.2 Defining trends for a single datapoint

1. Unlock the data file.
2. Focus the datapoint you want to set as trended (click the line). The datapoint is blue.
3. Select the **History** tab
4. Tick the Long time – monthly files option
5. Select the sampling interval, eg. 5 mins.
6. The datapoint is marked as *Trended* – see the icon in the right LH (Long History) column.
7. Save the data file.
8. Stop and run communication to start trending.

However, this way might be rather time-consuming for more datapoints. To save the effort, it is possible to change any property of more datapoint at the same time. In the next example, we will select more datapoints and define them as trended.



7.3 Defining trends for more datapoints together

Select the datapoints you want to set as trended by tagging them.

How to tag a datapoint:

1. Press **Ctrl+U** to untag all previously tagged datapoints

2. Focus a datapoint
3. Press the **T (Tag)** key. The tagged datapoint is marked by a green arrow.
4. Repeat for all the datapoints that should be selected.

We 28.10.2009 10:45:22		HW.Bus.irc01spocitana	10.0 °C				
We 28.10.2009 10:45:22		HW.Bus.irc01teplota	23.6 °C				
We 28.10.2009 10:45:24		HW.Bus.irc02akt_mod	ON				
We 28.10.2009 10:45:22		HW.Bus.irc02pid_out	-79.9 %				
We 28.10.2009 10:45:24		HW.Bus.irc02poz_t_den	23.0 °C	-	+	INIT	
We 28.10.2009 10:45:24		HW.Bus.irc02poz_t_noc	18.0 °C	-	+	INIT	
We 28.10.2009 10:45:24		HW.Bus.irc02poz_t_vyp	10.0 °C	-	+	INIT	
We 28.10.2009 10:45:23		HW.Bus.irc02set_mod	OFF	ON	OFF		
We 28.10.2009 10:45:23		HW.Bus.irc02spocitana	23.0 °C				
We 28.10.2009 10:45:22		HW.Bus.irc02teplota	23.5 °C				

Note

Now, the trending properties will be set for all the datapoints together. This is done with Group functions. Note that the Group functions are a very powerful tool and it is recommended to check if no other data points are tagged prior to invoking the Group functions dialogue, as the Group functions may set various parameters of the data points.

The number of currently tagged datapoints is indicated in the table header:

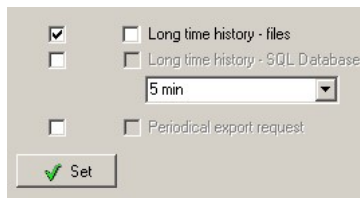
Local DP actualization							
ch.1		00:02[mm:ss]	00:02[mm:ss]	Tagged: 4			
Value				Par.1	Par.2	Block	SH
0.0 %							
23.0 °C				-	+	INIT	

1. Press **Ctrl-G** to enter the Group functions dialogue.
2. Select the **History** tab.

3. Tick the **Set** option for *Long term history – files* parameter. This indicates that the *Long term history – files* parameter will be **changed** for all the tagged datapoints.
4. Tick the *Long term history – files* parameter. This indicates that the *Long term history – files* parameter will be **set** for all the tagged datapoints. This corresponds to Step 4 from the *Defining trends for a single datapoint* example above.

Hint

Just to illustrate: with the settings below, the *Long term history – files* parameter for the tagged datapoints would be **reset**.



5. Click the **Set** button. All tagged datapoints will be set as Trended.
6. Check if the LH (Long History) icon has been set for all the tagged datapoints.
7. Press **Ctrl+U** to untag all tagged datapoints unless you want to perform further settings on them.
8. Save the data file.
9. Stop and run communication to start trending.

7.4 Displaying the trends

Even without plant graphics, the trend data can be displayed as graph, and exported to Excel and .csv files.

Suppose the trending has been running for some time and there are some trended data available. It is easy to check in the project directory:

2009_10_long.txtl	1 kB
last_edited.inw	1 kB
MY_PROJECT.dtw	147 kB
MY_PROJECT.dtw.bak	146 kB
MY_PROJECT.dtwx	15 kB
MY_PROJECT.var	1 kB
resource.xml	1 kB
tmp.atpl	1 kB

The **2009_10_long.txtl** is a trend data file.

To display the trend data from selected datapoints:

1. Go to the Data point editor (**Ctrl-E** from the main program window or **View – Database editor** in the main menu)
2. Tag the trended datapoint(s) which you want to display as a graph
3. Click the Trend icon on the toolbar



4. The graph window opens with the recorded datapoint(s) values.

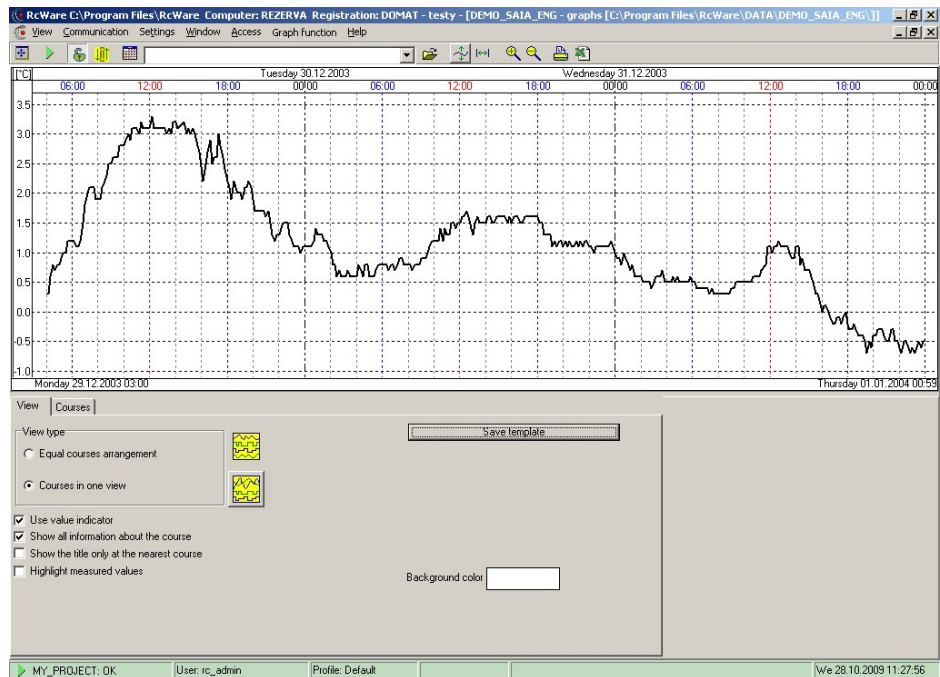


It is possible to unlock the trend. Then, additional settings can be made (change of line colours, adding / deleting datapoints from the view, highlighting measured values etc.). The modified trend can be saved as a template.

To save the trend as a template:

1. Unlock the trend
2. Modify trend if necessary
3. Click the Save template button
4. Enter new template name
5. Click OK.

The template can be invoked either from the trend window upper bar menu or from the plant graphics by clicking a button to which the template is assigned.



To export the current view to a .csv file, click the Excel icon on the toolbar.

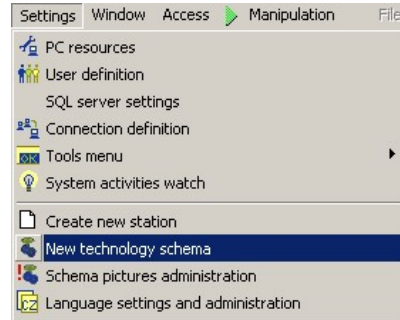
8 Plant graphics

Plant graphics pages (schemas) are stored in .sch files in the project directory. In each project, there may be any number of schemas.

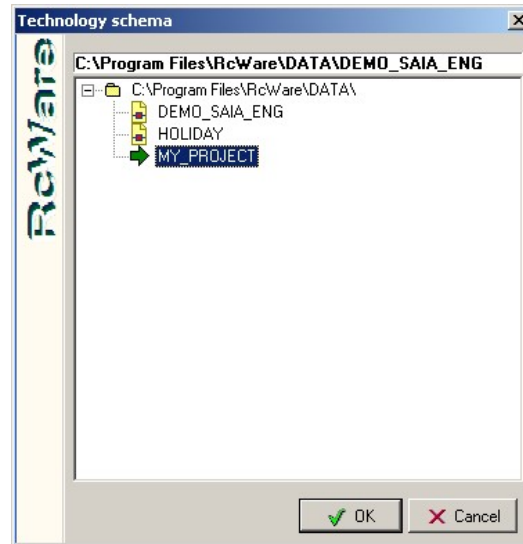
8.1 Creating a new schema

To create a new schema, follow the points below:

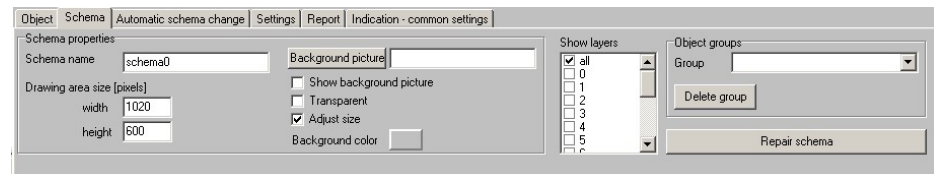
1. Go to the Settings – New technology schema



2. Select the project which you want to create the schema in. Click OK.



3. A new schema is created.
4. Unlock the schema to allow editing. Tabs appear in the lower part of the screen.
5. Click the Schema tab and edit the schema properties if necessary:



Schema name: file name under which the schema will be saved

Drawing area size: pixel dimension of the schema area. 1020 x 600 is the recommended size for 1024 x 768 screen resolution so as to fit to the screen along with the menus, status bar etc.

Background picture: optional bitmap which displays as schema background, such as floor plan or plant picture. The background is not editable in the schema, it is only configurable in this dialogue.

After a background picture is selected, the **Show background picture** option must be ticked to display the background picture in the schema.

Transparent: the colour defined as transparent in the bitmap is invisible. Use a suitable bitmap editor to define this in the background bitmap.

Adjust size: the bitmap is stretched across the entire schema.

Background color: in case that no background picture is selected, this is the colour of the working area.

Layers and **object groups** concern user rights and access policies and will be described later.

6. Change the schema name to e.g. *MainPage* and save the schema.

The page is now empty. No other page-related settings are necessary for the moment.

8.2 Inserting objects into schema

The objects in the schema are of various types:

text – free definable text with complete Windows font formatting properties

bitmap – fixed size or stretchable

value indicator/control – displays analogue / digital datapoint value, allows changes of values (settings, switching...)

button – jumps to another schema

shape – basic geometric shapes

line – connecting lines with pipe functionality

animation – symbol changing bitmaps according to the state of one or more datapoints

time program – weekly scheduler

heating curve – graphic representation of a 4-point heating curve

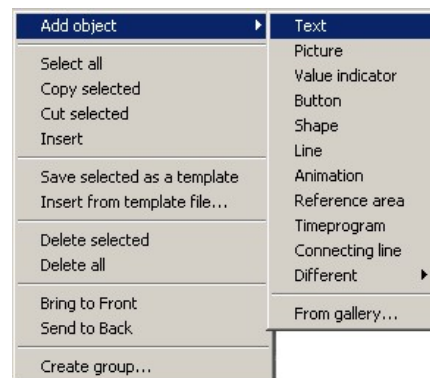
graph – embedded online trend with one or more datapoint values

As bitmaps, *BMP, *JPG, *JPEG, *ICO, *GIF, *EMF, and *WMF files can be used.

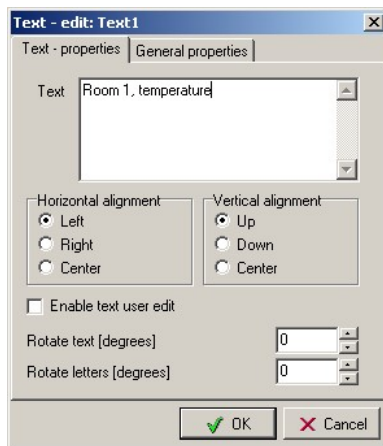
In the following example, let us insert some texts together with datapoint values:

8.2.1 Inserting text

1. Right click on the empty schema, **Add object, Text**.



2. In the properties window, enter the text to be displayed:



3. In the General properties, select text properties:

Border: none

Text color: color of the text

Background color: only relevant if non-transparent background

Visible: text visibility

Transparent background: yes, for this case

Font: change font properties if necessary

4. Click OK to insert text.

5. Drag the size of the text box so that the complete text is visible.



8.2.2 Copying objects

The objects may be copied by the **Ctrl-C**, **Ctrl-V** functions. To copy more objects at a time, select more objects by **Ctrl+mouseclick** or by dragging the mouse across the area containing the objects to be selected.

8.2.3 Deleting objects

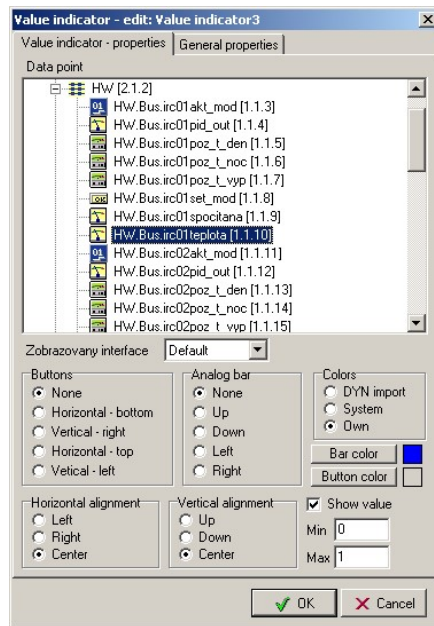
To delete object, select one or more objects by **mouseclick** or **Ctrl+mouseclick**, and press the **Del** button.



Click **Yes** to confirm deleting of the object(s).

8.2.4 Inserting value indicator

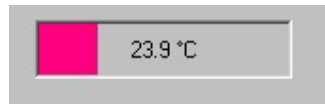
1. Right click on the empty schema, **Add object, Value indicator**.
2. In the *Properties* tab, select the datapoint you wish to display.



3. You may want to modify some parameters of the value indicator:

Buttons: If the datapoint is a setter (on/off, multistate or analogue), specify the position of the controls. If None is selected, no control is available and the datapoint only displays its value.

Analog bar: the "thermometer" function. If selected, check also the **Bar color**, **Show value**, **Min** and **Max** parameters. The example below is an analog bar aiming right, *Show value*: ticked, with bar color pink and *Min*: 0, *Max*: 100.

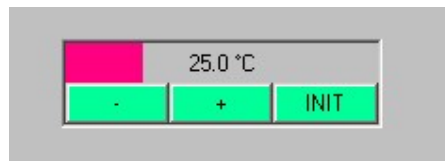


Colors: use Own.

Horizontal alignment: position of the value inside the box

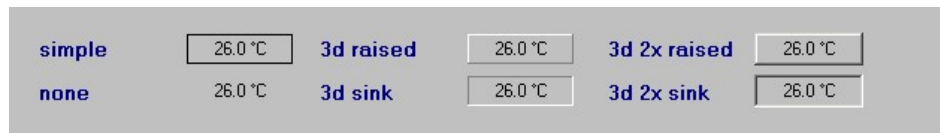
Vertical alignment: position of the value inside the box

Button color: color of the control buttons, if they are enabled (see **Buttons**). The example below is *Buttons: Horizontal - bottom*, *Button color: Light green*.



4. In the General properties tab, specify the general parameters of the indicator:

Border: usually, read-only values are set as "3d 2x sink", setpoints are set as "3d 2x raised". See following example of different Border settings:



All the other properties are similar to those of the Text field.

Other properties of the Value indicator, such as texts, states, precision, units etc. are defined in the datapoint properties in the data file. The datapoint properties may be changed in the data file editor.

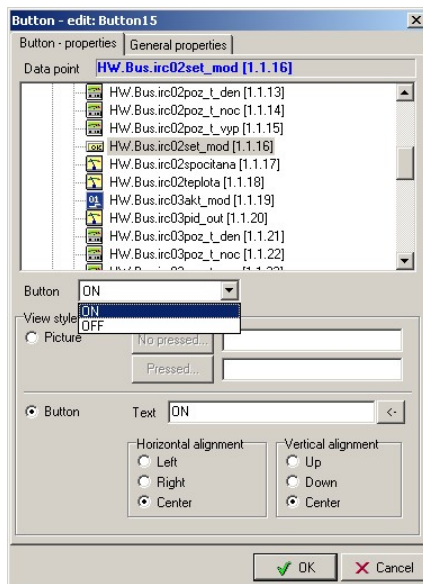
8.2.5 Inserting button

A button is an object which brings any of the binary / multistate buttons of the data point into the schema.

We 28.10.2009 15:02:05		HW.Bus.irc02poz_t_noc	18.0 °C	-	+	INIT
We 28.10.2009 15:02:05		HW.Bus.irc02poz_t_vyp	10.0 °C	-	+	INIT
We 28.10.2009 15:02:06		HW.Bus.irc02set_mod	OFF	ON	OFF	
We 28.10.2009 15:02:06		HW.Bus.irc02spocitana	23.0 °C			
We 28.10.2009 15:02:05		HW.Bus.irc02teplota	23.5 °C			
We 28.10.2009 15:02:06		HW.Bus.irc03akt_mod	OFF			

By clicking the ON button in the (locked and communicating) data file, the *HW.bus.irc02set_mod* variable (or datapoint, by other words) is set to ON. The same job now does the button in the schema:

1. Right click on the schema, **Add object – Button**
2. Doubleclick the variable which contains the button you want to assign. The variable name appears in the *Data point:* field in blue letters.
3. Select the state which should be assigned to the button in the *Button* drop-down box. In our example, this is ON. This means that after the button in the schema is clicked, the datapoint is set to ON.



4. Either set the images for not pressed and pressed states in the *Picture* frame, or define the texts which the button shall contain in the *Button* frame. The "<->" arrow copies the text from the data file; but also another text may be entered.
5. If necessary, change the horizontal and vertical alignment.
6. Click OK to insert the button in the schema. The example below shows a released and a pressed button.

