SoHVAC V3.0.0.0
Release Notes

Software Version:	**3.0.0.0**
Release Date:	**December 2, 2014**
Update Date:	

This document contains important information about the SoHVAC software. Please read the complete document <u>before</u> you start the installation and operation of the product.

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1 IMPORTANT INFORMATION

1.1 Up-To-The-Minutes Notes

Latest notes that arrived after close of editorial work will be placed in the appendix and are available in English only.

1.2 Other Literature Provided

Along with the installation package of SoHVAC you will find additional literature on the distribution media. Most of that literature is provided as PDF-formatted documents that require the installation of the Adobe Reader ™. This reader is not part of the SoHVAC installation but can be downloaded from **www.adobe.com**

Further information about this release of the product can also be found under

www.schneider-electric.com
Products and Services > Automation and Control > PAC, PLC & other Controllers> Controllers (PLC) for Commercial machines> OEM machine programming software - SoHVAC

In addition use the documentation that is provided along with the hardware components you are going to use in your SoHVAC project.

Take care that you have received the necessary manuals of the hardware components, read them carefully and follow carefully the instruction given to operate the devices.

2 PRODUCT OVERVIEW

SoHVAC is the software solution developed specifically for OEM HVAC&R machine builders that provides one common tool, one connection, one project file and one download interface to develop, configure, program and commission the company's machine control system

3 SYSTEM REQUIREMENTS

3.1 Supported Operating Systems

This software can be installed on the following operating systems:

- Microsoft Windows 7 (32 bit and 64 bit)

Following software is required:
- Adobe reader to view help files
    - If Adobe is not installed it can be downloaded from the Adobe website http://get.adobe.com/reader/
- Internet Explorer or Mozilla Firefox to view reports

3.2 PC Hardware Requirements

System	Pentium processor 2,0 GHz or higher
RAM Memory	Minimum 1 GB; recommended: 2GByte
Hard Disk	minimum available free space 500 MB
Drive	DVD reader;
Display	SVGA 1024 × 768 pixel resolution or higher
Peripherals	A mouse or compatible pointing device
Peripherals	USB interface
Web Access	No registration required

3.3 Required User Access Rights

- You have to log-in with administration rights before you start installation of SoHVAC
  You must not launch the installation with normal user rights and change role in course of installation.

- You have to log-in with administration rights before you execute SoHVAC. Administrator rights are required to generate the application program

4 INSTALLING THE SOFTWARE

The SoHVAC Software can be downloaded from the following FTP server

FTP: ftp.fr.schneider-electric.com
Login: HVAC
Password: HVAC

The directory: **/HVAC/Fieldtest/SoHVAC V3.0.0.0** contains the following files
SoHVAC_3.0.0.0_Setup.exe
DownloadManager_V3.8.1.0_Setup.exe

The SoHVAC Software is not available on DVD media.

4.1 Installation Hints

Before installing SoHVAC 3.0.0.0 on your computer you need to remove previous installed SoHVAC versions.

To start the installation process, run the "SoHVAC_3.0.0.0_Setup.exe" file. Follow the installation wizard, which will guide you through the installation process.

4.2 Installation on computers with Windows 7 operating system

To start the installation process, select the "SoHVAC_3.0.0.0_Setup.exe" file and click right mouse key and select "Execute as Administrator". Follow the installation wizard, which will guide you through the installation process.

To execute SoHVAC under Windows 7, double click SoHVAC or call SoHVAC from Windows start menu. A user account control message box will appear, like the figure below. Click on Yes to start SoHVAC software.

Proceed with Yes and the installation wizard for SoHVAC V3.0.0.0 will start and will guide you through the steps

At the end of the SoHVAC installation, you will be asked to install the Fujitsu compiler. The Fujitsu compiler is required to build the M168 binary files for downloading in the M168 controllers.
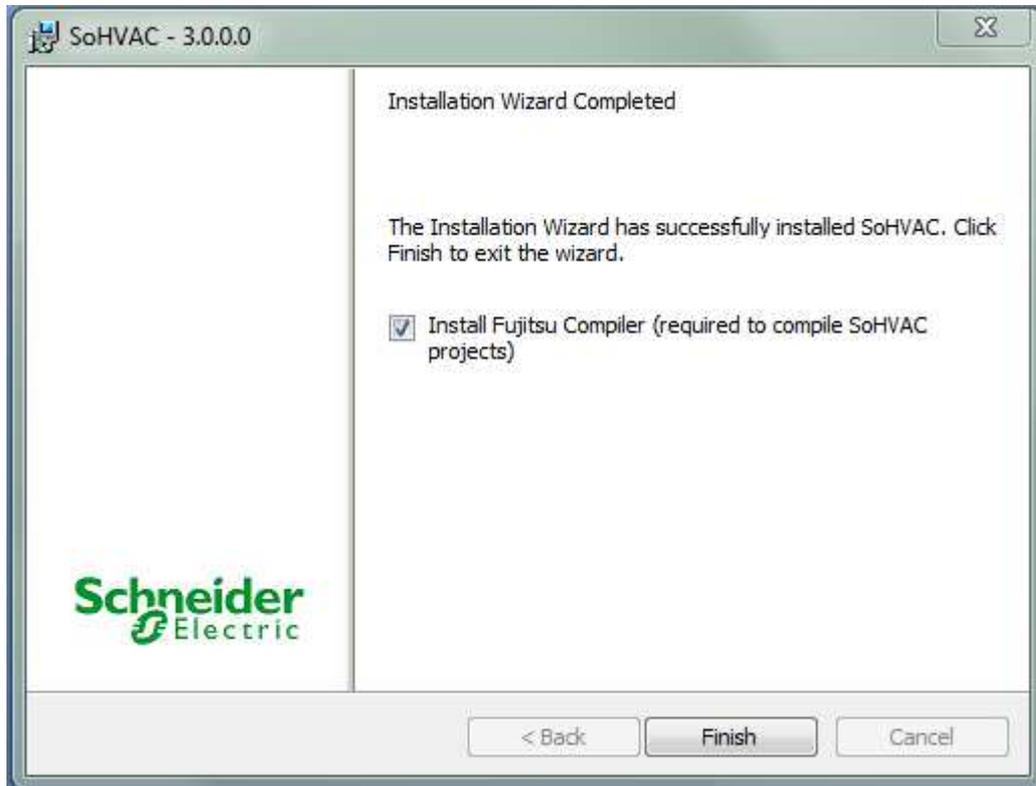
In case the Fujitsu compiler is already installed on your computer, you do not need to install it again. In that case you need to set the path to the compiler in the SoHVAC software under the menu: Tools / Preference …

4.3   Registration

SoHVAC does not require software registration.

4.4   Uninstall

 To uninstall SoHVAC software, start the installation process again and select the "Remove" operation. As an alternative you uninstall the SoHVAC software using the "Add/Remove Programs" function provided by the Windows control panel.

The Fujitsu compiler is not automatically uninstalled by the SoHVAC uninstall function. The Fujitsu compiler can be uninstalled using the "Add/Remove Programs" function provided by the Windows control panel.

5 IMPORTANT INFORMATION

5.1 Communication between PC & Controllers

The connection between PC & Controllers is using the programming cable. There are 2 types of communication cables:
- USB-A to RJ11
- USB-A to USB-A
-

For the 23 I/O controllers, 17 I/O expansion modules and the electronic expansion valve drivers use the USB-A to RJ11 programming cable

The communication port must be configured in the SoHVAC software under the menu Tools\Preferences…

For the 8 I/O controller use the USB-A to USB-A programming cable.

The communication port is automatically detected and it is not needed to configure the port in the SoHVAC software

6 APPENDIX

6.1 Operating limits

6.1.1 New functions in SoHVAC V3.0.0.0

The SoHVAC 3.0.0.0. software supports the following new functions
- Support new hardware; TM168B08*****
- Analog output with PWM (0..2kHz)
- Modbus master function block supporting function codes for digital coils
- New firmware for the electronic expansion valve driver supporting R407F refrigerant
- New Fieldbus profile generator V1.8.3.
- BACnet EDE export
- Enhanced BMS editor (multiple objects)
- Simulator for algorithm editor

6.1.2 Screen resolution

The optimum screen setup used by SoHVAC is 96 DPI (Dot Per Inch). In other configurations, some windows may not be correctly displayed.
The optimum screen resolution used by SoHVAC is 1280 x 1024 DPI (Dot Per Inch). In other configurations, some windows may not be correctly displayed.

6.1.3 Serial port initialization

When software starts, the default COM Port is initialized by the software. If controller is connected to this COM port, it will be reset. To avoid this, the controller must be disconnected from the programmer.

Each time the user changes the default COM Port the software makes a COM port initialization once you close the window. If a controller is connected to the newly selected COM port at the time

of the COM port initialization, that controller will be reset. That is, the controller stops executing its application, and all volatile data is re-initialized. In addition, all the outputs will fall back to their default values.

```
┌─────────────────────────────────────────────────────────────┐
│                        CAUTION                              │
├─────────────────────────────────────────────────────────────┤
│  UNINTENDED EQUIPMENT OPERATION                             │
│                                                             │
│  Disconnect the programming cable to your controller        │
│  before changing the COM Port.                              │
│                                                             │
│  Failure to follow these instructions can result in         │
│  equipment damage.                                          │
└─────────────────────────────────────────────────────────────┘
```

6.1.4   Performance

The SoHVAC project opening time and SoHVAC project compilation time depends on the number of graphical objects used in the project. The performance can be improved using following rules:

- Use c-algorithms instead of function blocks. C-algorithms are much more compact and may cover the functionality of many different function blocks
- Use c-algorithms for repetitive functions.
- Use library functions instead of template functions. Library functions prevent the user to open its sub sheets and therefore reducing the number of graphical objects.

The SoHVAC V3.0.0.0 has made significant performance improvements in the compilation time. If the compiler cache is enabled, see Tools \ Preference menu in SoHVAC, the compilation time is 4-5 times faster compared to SoHVAC 1.0.0.0.

6.1.5   Expansion bus

The expansion bus is used to connect the controller to other devices such as I/O Expansions and to remote user interfaces. A maximum of 32 devices can be connected to the expansion bus.

The number of devices which can be connected to the expansion bus depends on the network architecture and the type of devices. An architecture of multiple controllers and multiple IO expansion modules differs from an architecture of 1 controller and many IO expansion modules and remote display.

During system tests it is identified that there is a correlation between the baudrate of the expansion bus network and the number of devices on the expansion bus network. As the expansion bus network is a multi-master network, by increasing the number of devices, it will increase the communication over the network. The following table indicates the recommended maximum number of devices versus the baudrate, where the debug function is disabled. By increasing the baudrate on the network, it will reduce the maximum length of the expansion bus. The recommended maximum number is an indication, but might be less depending on the application, the device types on the network, debug mode enabled-

Baud Rate	Recommended Maximum Number	Maximum Cable Length
20 kbit/s	4 devices	1000 m (3280 ft)
50 kbit/s	8 devices	500 m (1640 ft)
125 kbit/s	16 devices	250 m (820 ft)
500 kbit/s	32 devices	50 m (164 ft)

6.2   Documentation

The documentation is updated, and has passed the safety review process.
The following section describes the latest changes which are not included in the technical literature.

6.2.1   Download applications

In order to download applications to the TM168B08***** controller, connect a USB-A to USB-A programming cable between the PC and the M168 controller.
Click on the download icon in the SoHVAC software. The software will automatically detect the communication port and no configuration is needed in the SoHVAC software.

6.2.2   Analog outputs with PWM

The new TM168*08***** controllers has 1 analog output which can be used also as PWM analog outputs. The maximum frequency is 2kHz.
The frequency for the analog output is a property of the analog output entity.
The input of the analog output entity defines the ratio of PWM signal in 0..100% (2 decimals)

6.2.3   BACnet EDE files support

In a multi vendor system, engineering data need to be exchanged between the interacting parties. From the native BACnet point of view it is not really required to have data point lists, because data of object properties from any device can be discovered online using the appropriate BACnet services. But depending on the BACnet functionality supported by server device or client device, it may be necessary to have this information in form of an offline description. This also is required, if the client needs to be set-up before the server device is operational on the network.

The Engineering Data Exchange (EDE) template shall help to exchange engineering data, such as data point types, data point addresses and special data point presentation information in a standardized form.

The Engineering Data Exchange template shall provide a common means to describe the objects of a data point server in the form of a Microsoft ® Excel spreadsheet.

To create EDE files, open the fieldbus profile generator from the Tools menu in soHVAC. The following dialog window will be opened,
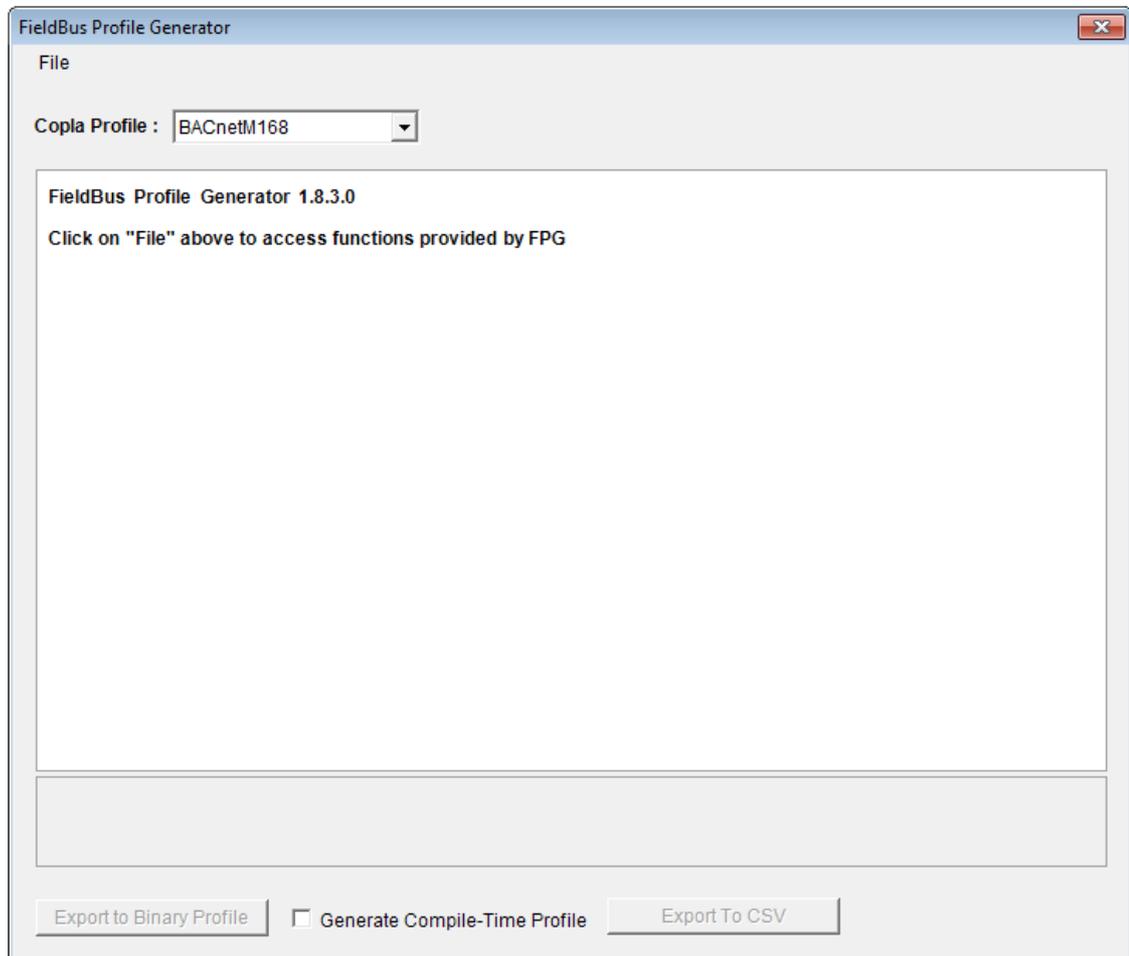
Through the File menu, open a DDXML file or Profile.bin file. These files can be found in the subdirectory BMS under the projects directory.

Once the file is opened the window will look like below:
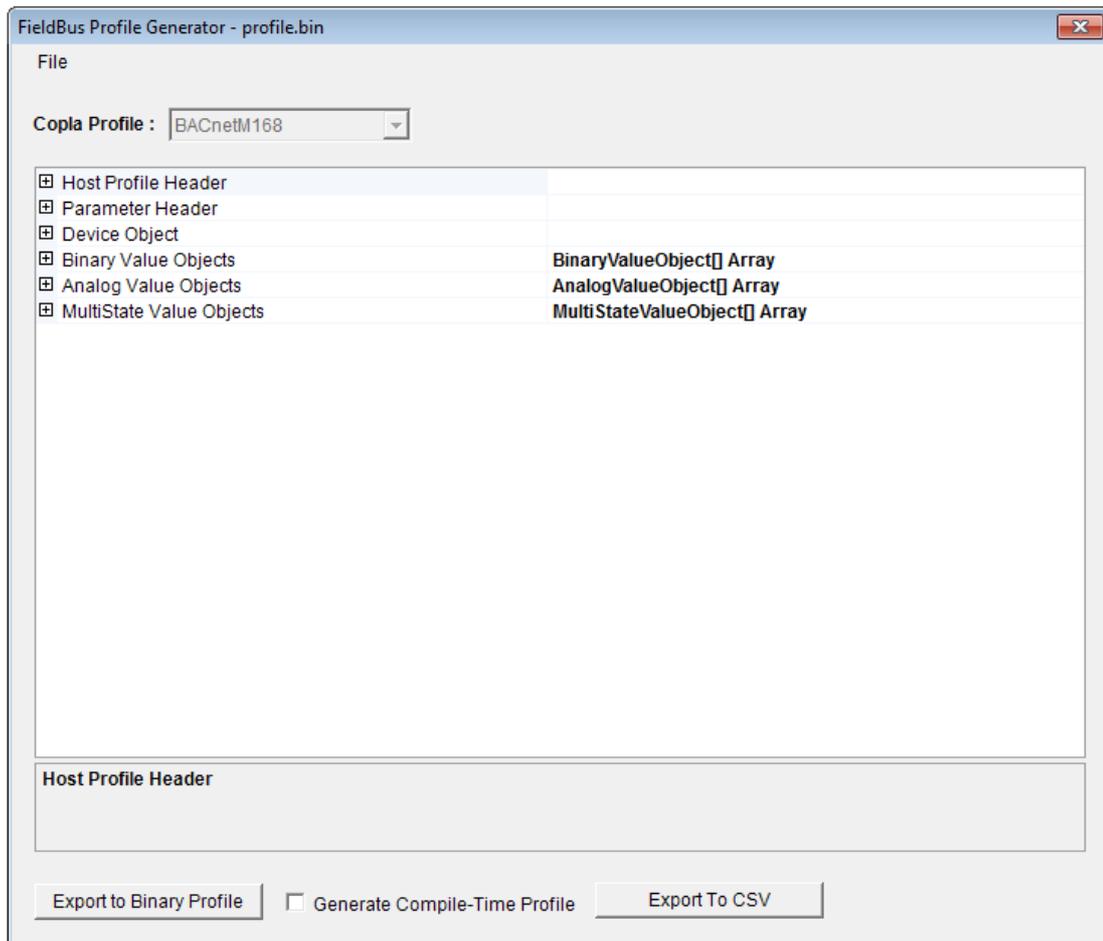
Pressing the Export To CSV button will generate the BACnet EDE files in CSV format.

6.2.4 New Library function AI_To_Resistance

The new TM168*08***** controller supports reading analog input in resistance value

AI_To_RESISTANCE

Function Block Diagram

Functional Description

The AI_To_RESISTANCE library converts an analog input value in a resistance value in ohm.

The function works correctly with the following configuration:

- The analog input must be configured as RESISTANCE input.

- The AI pin must be directly connected to a real analog input (out pin of ANALOGIN library) and not to a CJ_ANALOG variable.

Example
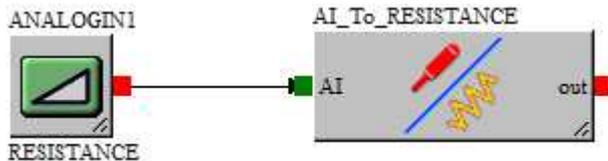
Input Pin Description

Input	Type	Range	Description
In	CJ_ANALOG	Value: -32768...32767 Error: 0...2	Sensor input

Output Pin Description

Output	Type	Range	Description
out	CJ_LONG	-2147483647...2147483648	Resistance value in ohm

6.2.5   New Library function LCDBacklightTimeout

LCDBacklightTimeout

Function Block Diagram

Functional Description

The LCDBacklightTimeout library allows you to set the value of the LCD backlight timeout duration for the M168 controller build in display. The LCD backlight timeout is only active when the LCD is configured as "Time" in the LCDBacklight library.

To set the value, adjust the value property of the P_LCD_BacklightTimeout parameter present in the library.

To understand how to change a parameter value, refer to the SoHVAC Software User Manual.

NOTE: This is a single instance library.

NOTE: This is a template type library.

Input Pin Description

Input	Type	Range	Default value	Description
In	CJ_BYTE	0…240	60	Sets LCD backlight timeout

Output Pin Description

Output	Type	Range	Description
out	CJ_BYTE	0…240	Returns LCD backlight timeout

6.3   HVAC Library structure in SoHVAC

The library structure in SoHVAC V3.0.0.0. is new organized. There are 3 main groups

- Application libraries. This folder contains subfolders dedicated to HVAC control including ATV drive function blocks, compressor function blocks and function blocks related to energy monitoring. The new HVAC&R application function blocks are included in the installation process.

- Standard libraries. This folder contains the basic function blocks to build control logic
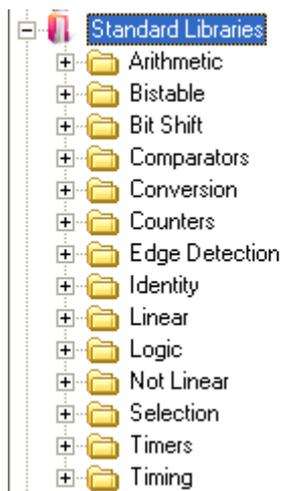
- System libraries. This folder contains the function blocks related to the controller hardware
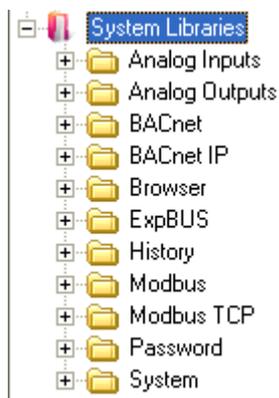
6.4   Known issues

Following issues are known in this field test version of the SoHVAC software / hardware and will be corrected in the next release

Priority 1
Communication issue when downloading applications to the controller on systems with Windows 7
During downloading of the application program an error message appears, indicating that the COM port cannot be opened. This error occurs on PC's which have SoMachine V4.1 installed.
Please contact your local support if you have this error.

Priority 3
Wrong unit for OilRecoveryTime (SoHVAC HVAC-R Function Library User Guide)
The unit is documented as seconds, but should be minutes

Priority 3
Wrong unit in expansion bus I/O Time-out (M168 Hardware User Guide)
The unit is documented as seconds, but should be 0.1 seconds