



Data Sheet CODESYS Building Automation library

The “Building Automation library” includes function blocks intended to support application development in the building automation field.

Product description

The CODESYS Building Automation library is intended to support the application development in the building automation field using CODESYS.

It has the following characteristics:

- Provided with open source
- Free of charge

The main design aspects or goals include the following:

- Easy to understand and intuitive to use
- Use “Common Behaviour Model” wherever appropriate
- Time (axis) related function blocks are “warp clock” enabled to support non-real-time testing and simulation.
- Oriented towards VDI 3814 Bl. 3.1 wherever appropriate

The CODESYS Building Automation library includes visualization elements generated with the CODESYS FB Visu Creator (<https://store.codesys.com/fb-visu-creator.html>). Those visualization elements are intended to be used to simplify learning about the functionality of function block provided by the CODESYS Building Automation library. They might be used in application visualization, but this is not the main focus. In addition, those visualization elements can help users to learn how to build their own visualization elements for function block provided by the CODESYS Building Automation library by demonstrating the interconnection between function blocks and visualization elements.

The CODESYS Building Automation library is not intended to cover all aspects of building automation application development from the very beginning. It is intended to grow over time by contributions. To give users some additional support, the documentation of CODESYS Building Automation library will point to other open-source, free-of-charge libraries containing useful functionality not supported by the CODESYS Building Automation library. The CODESYS Building Automation library is intended as a development template and not as a mature product. The user is solely responsible for the tests in its application modules with the appropriate procedures and for verifying the necessary accuracy, quality, and functionality. Despite this, the CODESYS Building Automation library comes with extensive automatic testing.

The CODESYS Building Automation library starts with some:

- specific actuators
- specific aggregates or assemblies
- specific control algorithms
- specific optimization algorithms
- an example to demonstrate aggregate variants
- examples to demonstrate how to use the CODESYS Building Automation library in HVAC, primary plants and room automation

to outline the design principles and provide the general infrastructure for implementation, documentation, release, etc. It is up to future contributions to extend and improve.

Actuators

- Fan3Stage : control a N-stage fan (N 1..3)
- HeatCool2Linear : support for 6-way-valves - map a heat / cool sequence (tuple operation mode / valve setpoint) to an “change over” control signal 2..10V / 0..10V.
- HVAC_Coil : HVAC heater/cooler coil

- HVAC_RotaryHeatExchanger : HVAC rotary heat exchanger
- PumpOnOff : pump on/off
- ValveContinuous : continuous valve
- ValveSixWay : control a 6-way-valve with a heat / cool sequence
- ValveThermo : thermal actuator valve
- WindowActuator : window actuator

Aggregates

- Fancoil3Stage : controls a fan coil unit with an N-stage fan (N 1..3)
- FancoilContinuous : controls a fan coil unit with continuous fan

Assemblies

- FourToTwoPipes : control support for four-to-two-pipe assembly

Control algorithm

- CommandExecutionMonitoring : command execution monitoring of of BOOL commands
- CommandVariable : command variable
- HVAC_AntiFreezeControlMonitor : control strategy for actuators / aggregates exposed to outdoor air flow to counteract potential frost damage
- HVAC_AntiFreezeControlSensor : control strategy for actuators / aggregates exposed to outdoor air flow to counteract potential frost damage
- HVAC_AntiFreezeControlStartup : control strategy for actuators / aggregates exposed to outdoor air flow to counteract potential frost damage
- RedundantPlantControl8 : controls a pool of max. 8 plants (actuators, aggregates etc.)
- SequenceControl : control up to four interconnected or related heat/cool sequences
- SequenceSwitch : is suppose to be used to switch sequence configuration of SequenceControl depending on process information

Optimization

- EnergyLevelSetpoint : selects the energy level related setpoint of a building (part) or system part (like a HVAC plant powering a building)
- HeatCoolUsingOutdoorAir : using passiv cooling (and eventually heating) using outdoor air (and an outdoor air actuator) in "economy" energy level to get the indoor air temperature in the "comfort" energy level setpoint range

Miscellaneous

- DailyMeanTemperature : "warp clock"-enabled daily mean temperature
- HeatingCharacteristicCurve : computes the appropriate water heating system supply temperature from outdoor air temperature
- RoomSetpoint : provides complex room temperature setpoint computation

Time related

- MaxOnTime : "warp clock"-enabled maximum on-time
- MinOnOffTime : "warp clock"-enabled minimum on-/off-time
- OnOffDelay : "warp clock"-enabled on-/off-delay
- OperationalTime : "warp clock"-enabled operational time (counter)
- PeriodicTimer : "warp clock"-enabled periodic timer
- WarpClock : is providing development / debugging control on the application time line

Examples

- ExampleAirConditioning1, ExampleAirConditioning2 : HVAC examples
- ExampleHeating : example heating circuit
- ExampleHotWater : example boiler control
- ExampleRoomAutomation : example room automation

General information

Supplier:

CODESYS GmbH
 Memminger Strasse 151
 87439 Kempten
 Germany

Support:

<https://support.codesys.com>

Item:

CODESYS Building Automation library

Item number:

000128

Sales / Source of supply:

CODESYS Store

<https://store.codesys.com>

Included in delivery:

- Package for the CODESYS Development System

System requirements and restrictions

Programming System	CODESYS Development System V3.5.16.0 or higher
Runtime System	CODESYS Control V3.5.16.0 or higher
Supported platforms and devices	Note: Use the "Device Reader" project for locating the functions supported by the PLC. The "Device Reader" project is available in the CODESYS Store free of charge.
Additional Requirements	-
Restrictions	-
Licensing	<div style="text-align: center;">  NO LICENSE </div> <p>No license is required.</p>
Required Accessories	-

Note: Not all CODESYS features are available in all territories. For more information on geographic restrictions, please contact sales@codesys.com.

Note: Technical specifications are subject to change. Errors and omissions excepted. The content of the current online version of this document applies.