

Datasheet HVAC Building Automation Package SL



HVAC (Heating Ventilation and Air-Conditioning) functional components and HTML5 visualisation. Automate and visualise your entire building technology professionally and independently of hardware: ventilation systems, heat generation, heating circuit distribution, individual room control, room automation, light and blind control. www.hvac-automation.com

Without purchasing a license (just download), the HVACLibrary SL runs for 30 minutes without functional limitations and disconnects automatically (demo).

Product Description

The HVAC Building & Process Automation SL product contains functional components and HTML5 system macros for creating, for example, heating and ventilation systems but also for room automation and other industrial system technology. There is an added value, above all, in the easy programming and the hardware independence of controllers and EA groups. Extensions such as, for example, MySQL Library, IO drivers and more allows the user a modular coverage of the requirements. The product portfolio is always being expanded with new functions, products and communication links of common bus systems. Extensive training sessions, support and individual service provisions for software creation complete the offer.

Benefit from 30 years of experience in building automation: Development, closely associated with practice, of this library is our aspiration.

Decide yourself for the controller you want to run your application - simple, inexpensive automation tasks on a Raspberry Pi with full functionality or professional, fail-safe automation tasks on other controllers - industrial PC or a controller of the 350 producers from the CODESYS device directory.

Detailed wiki on www.hvac-automation.com

Range of Functions

Overview of all function blocks with short description.

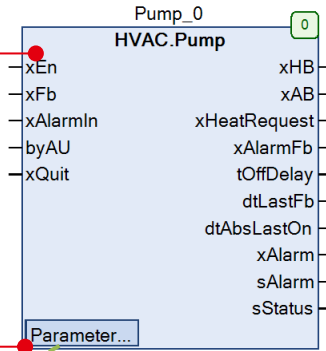
Sector	Component	FB	Funct.	Short description
Alarming	AlarmCounter	X		Counter for the active alarms of an alarm group
Binary	Abs3P	X		Anti-blocking protection for a 3-point drive
	AbsB	X		Anti-blocking protection for a 2-point drive
	ManBin	X		Manual override for a binary signal
	Trig	X		Edge detection and impulse generation
	TrigGen	X		Impulse generation with adjustable time interval
Button	Button4	X		Switching element with four control inputs
	ButtonToggle	X		Switching element with key and central control (e.g. Lights)
Clock	Clock7d1Ch	X		7 weekday time switch, one switch-on / switch-off points
	Clock7d2Ch	X		7 weekday time switch, two switch-on / switch-off points
	Holiday	X		Holiday clock with 10 holiday seasons
	PublicHoliday	X		Public holiday clock with 30 channels
	SwitchTimeS	X		Timer with 5 adjustable time periods by date
	TimeRead	X		Read out of the system time in different formats
Components	Damper2P	X		Control of a 2-point drive

	DamperAnalog	X		Control of an analog/steady damper drive
	DuoPump	X		Control of a double pump
	Fan1Speed	X		Control of a single-stage fan
	Pump	X		Control of a single-stage pump
	Shade	X		Control of a blind drive with central function
	Valve3P	X		Control of a valve with 3-point drive
	ValveAnalog	X		Control of a valve with an analog/steady drive
	ValveTherm	X		Control of a valve with 2-point drive
Control	Control2P	X		2-point controller with switching hysteresis
	Control2Seq	X		Sequence control for an analog input signal
	ControlP	X		Proportional controller (P-controller)
	ControlPI	X		Proportional integral acting controller (PI controller)
	Out3P	X		Generation of output signals for a 3-point actuator (pulse width modulation)
Counter	ImpulseCounter	X		Impulse counter with adjustable reduction
	OperatingHours	X		Counter for operating hours and switch-on procedures
Damping	AverageTime	X		Averaging for 4-time periods – arithmetic mean
	AverageTimeCal	X		Averaging for 4-time periods – weighted average
	DampingT1	X		Timing filtering of an analog input signal
	Ramp	X		Limitation of the signal change of one analog input signal
Energy	hxChart	X		Calculation of values from the Mollier-h-x-diagram
General	CDate	X		Conversion of the date components Day/Month/Year to the date format (YYYYMMDD)
	CTime	X		Conversion of a time-input (UDINT) into a time-output (TIME).
	CToD	X		Conversion of the Time-components minutes/hours to Time of Day (ToD)
	ManInfo	X		Status display of all manual overrides and central reset
	MuxString2BinFun		X	Multiplexer with 2 inputs of type STRING, binary choice
	MuxString4BinFun		X	Multiplexer with 4 inputs of type STRING, binary choice
	MuxString5BinFun		X	Multiplexer with 5 inputs of type STRING, binary choice
	MuxString5Fun		X	Multiplexer with 5 inputs of type STRING, numeric choice
	OpModeSelect	X		Operating mode selector for switching between a maximum of 6 operating modes
	Redundant2	X		Redundant control of two devices similar in type
Monitoring	AirShortage	X		Detection of an air shortage and generation of a fault message
	FilterMonitoringB	X		Detection of a filter contamination and generation of a fault message
	Position3P	X		Calculation of the actual position of a 3-point drive
Numeric	AbsA	X		Anti-blocking protection for an analog signal/steady drive
	AverageCh	X		Calculation of a weighted average of a maximum of 6 inputs.
	Limiter	X		Limit value monitoring of an analog value
	ManNum	X		Manual override numeric (analog signal)
	Max8Fun		X	Maximum selection of 8 numerical input variables
	Min8Fun		X	Minimum selection of 8 numerical input variables

	MoveEnFun		X	Transmission of a numerical input signal with release
	MoveStore	X		Transmission of a numerical input signal with saving
	MuxBin2Fun		X	Multiplexer with 2 inputs of type REAL, binary selection
	MuxBin5Fun		X	Multiplexer with 5 inputs of type REAL, binary selection
	Offset	X		Addition of a numerical input variable with an offset value
	OffsetFun		X	Addition of a numerical input variable with an offset value
	TwoPoint	X		Linear conversion of a numerical input value
Setpoint	Edit	X		Input of a numerical value in REAL format
	EditBool	X		Input of a binary/bool value
	EditDate	X		Input of a DATE value
	EditDT	X		Input of a DATE_AND_TIME value
	EditMinMaxVisu	X		Input of a numerical value in REAL format with input limits
	EditPoti	X		Setpoint generator with edge-controlled increase / decrease of the setpoint.
	EditString	X		Input of a STRING value
	EditTime	X		Input of a TIME value
	EditTOD	X		Input of a TIME_OF_DATE value
	HeatCurve4P_DN	X		Heating curve with four outdoor temperature points and two characteristic curves (night, day).
Time	MPulse	X		Edge-controlled impulse generation with adjustable minimum duration
	PulseShift	X		Generation of a delayed exclusive pulse with adjustable duration
	StartDelay	X		Generation of signals after each CPU restart
	StopWatch	X		Measurement of time periods with reset Option.
	StopWatchExt	X		Measurement of time periods with plus-/minus-Input and reset option
	XPulse	X		Generation of an exclusive impulse with adjustable time duration

Screenshots

CFC function block with in- and outputs



Click to open parameter window

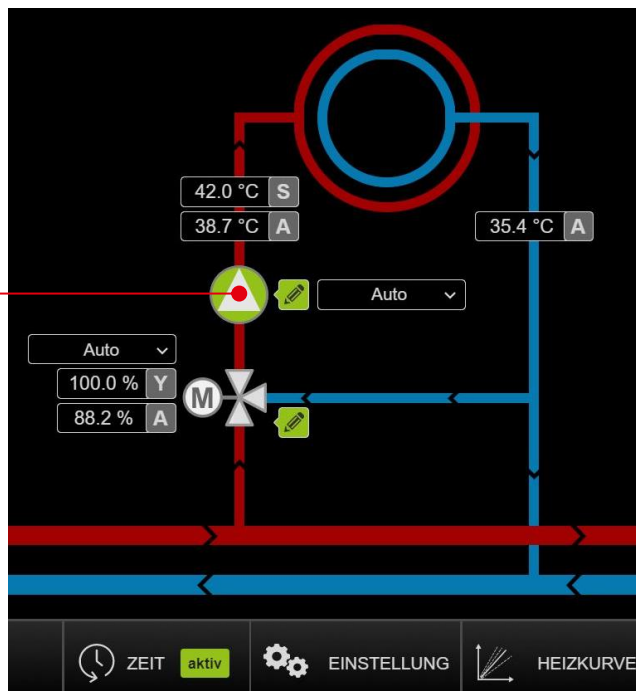
Parameter window

The 'Parameter bearbeiten' window displays a table with the following data:

Parameter	Datentyp	Wert	Initialwert	Beschreibung
eManModeB	eMANBIN		eMANBIN.Auto	Betriebsart der Handübersteuerung für den digi
udiOffDelay	UDINT	120		Nachlaufzeitdauer der Umwälzpumpe
eOffDelayTimeBase	eTime		eTime.Second	Skalierung der Nachlaufzeit (Sekunden / Minute
udiOperatingHours	UDINT			Betriebsstunden der Umwälzpumpe
udiCountFb	UDINT			Anzahl der Einschaltungen der Umwälzpumpe
eAbsDay	eDoW		eDow.Monday	Wochentag des Blockierschutzbetriebs
todAbsStartTime	TIME_OF_DAY		TIME_OF_DAY#8:0	Zeitpunkt des Blockierschutzbetriebs
tAbsTime	UDINT	120		Zeitdauer des Blockierschutzbetriebs
xFbControl	BOOL		TRUE	Freigabe der Betriebsüberwachung
udFbControlTime	UDINT	60		Zeitdauer der Betriebsüberwachung
xAlarmControl	BOOL		FALSE	Sperrung der Freigabe bei Störungen ?

Simple edit

Matching visu elements and macros



Detailed documentation of each function block

Anti-lock module

The anti-lock module is implemented by the binary anti-lock module with adjustable time duration. The duration *tAbsTime*, the time **tAbsTime** and the weekday **eAbsDay** are adjustable. The time stamp (date / time) of the last anti-lock operation *dtAbsLastOn* is available.

xAlarm output

<i>xAlarmIn</i>	<i>xAlarmFb</i>	<i>xAlarm</i>	Notes
FALSE	FALSE	FALSE	Collective fault is inactive
TRUE	FALSE	TRUE	External hardware error is active
FALSE	TRUE	TRUE	The operation monitoring error is active
TRUE	TRUE	TRUE	Both errors are active

Legend: X = any

Operating hours counter

The operating hours meter is active if the circulation pump is in operation (*xFb* = TRUE) and at the same time the collective malfunction. The number of operating hours **udiOperatingHours**, and the number of times **udiCountFb** are output to the corresponding outputs. The time stamp (date / time) of the circulating pump *dtLastFb* operation is available.

Operation monitoring

The operation monitoring monitors the correct function of the circulation pump. The monitoring can generally be enabled (**xFbControl** = TRUE) or disabled (**xFbControl** = FALSE). The automatic operation of the circulation pump must also be active (*eAoo* = HVACTYPES.eManBin.Auto).

The input *xFb* and the output *xHB* are permanently matched. If the states during one adjustable duration **udiFbControlTime** are always unequal (i.e. the pump is enabled but there is no operational feedback), the error message of the operation monitoring ***xAlarmFb*** is activated.

General Information



Supplier	powerIO GmbH Eberhardstr. 55 70173 Stuttgart Germany
Support	support@powerio.com
Product	HVAC Building Automation Package SL
Order Number	2312000005
Sales	CODESYS Store store.codesys.com
Scope of Delivery	<ul style="list-style-type: none"> ▪ HVAC Library ▪ HVACV Library (Visu elements) ▪ Example Project in CFC with visualization

Systemvoraussetzungen und Einschränkungen

Programming System	CODESYS Development System V3.5.9.0
Target System	CODESYS Control V3.5.9.0
Supported Platforms / Devices	<p>Tested devices: CODESYS Control Win V3, Raspberry Pi, Beagle Bone Black, WAGO PFC 200, Janztec emPC-a/iMX6</p> <p>Notice: Use the project 'Device Reader' to find out the supported features of your device. 'Device Reader' is available for free in the CODESYS Store.</p>
Additional Requirements	no
Restrictions	
Licensing	License activation optional on CODESYS Runtime Key or CODESYS Softcontainer.