SIEMENS

SAPHIR
OPC via the RCC Card (ACX52.22)
IV Produkt LB20 Application v3.x

Engineering Guide

CE2Y3679en/IVP
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Siemens Building Technologies
HVAC Products

Contents

1 About this Document

1.1 Foreword

Purpose

The purpose of this document is to provide users with a quick and simple means to familiarize themselves with the configuration of OPC and use of the RCC card.
The communication card ACX52.22 is used by the ACX32 and ACX34 controller.

1.2 Notes on Use

Target audience

This document is intended for developers who perform commissioning of the RCC card. For operation and planning of the SAPHIR OEM primary controller, please refer to additional documents, such as:

Further information

- SAPHIR ACX32..., Device Datasheet (Order No: CE2Q3689en)
- SAPHIR ACX52.22, Device Datasheet (Order No: CE2Q3679en))

You can order this and other publications from Siemens Building Technologies, HVAC Products.

1.3 Symbols and Abbreviations

Passages introduced by this symbol indicate a warning to help prevent incorrect operation.

Passages introduced by this symbol indicate that the text must be read with special attention.

Paragraphs with this symbol provide tips.

Abbreviations

Abbreviation	Description
RCC	Rainbow Communication Card
OPC	OLE for Process Control
WINS	Windows Internet Naming Service
DHCP	Dynamic Host Configuration Protocol
TCP/IP	Transmission Control Protocol / Internet Protocol
MAC address	Media Access Control; globally unique, 32 bit "serial number" of the network card
VVS12.0	Valid Version Set

1.4 Revision History

Revision	Date	Author	Remark
1.0	2005-10-27	Michael Sjöberg	First release
1.1	2006-05-23	Michael Sjöberg	OPC Proxy, Troubleshooting…

2 RCC Communication card

2.1 What is RCC?

General

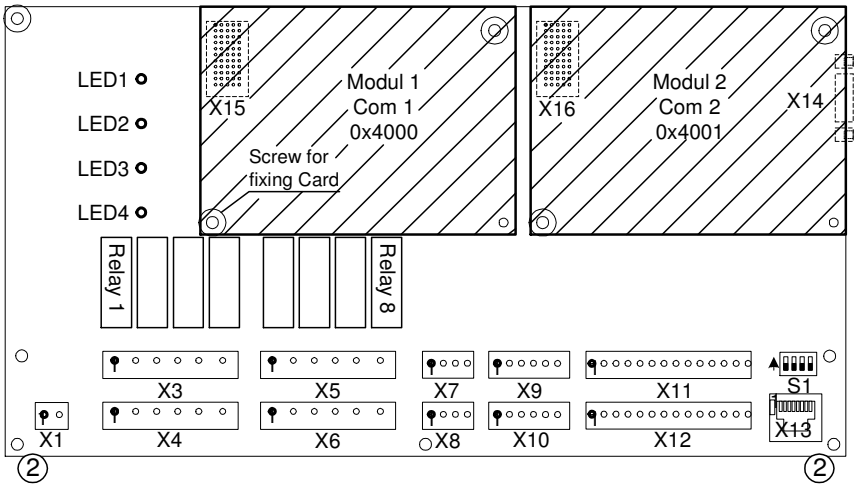
The RCC card is a communication card that can be used in conjunction with both SAPHIR primary controllers (ACX32 and ACX34) and contains among other things:
- Web server and FTP server
- OPC server
- TCP/IP

The explanations provided in this document are generally based on the basic configuration of the RCC card.
The term basic configuration refers to the as-delivered state of the ACX52.22 RCC card. All information refers to WINDOWS CE image RCCV2_VVS12.0 or higher and are also required for OPC communication.

⚠ The VVS12.0 RCC card requires the OS3.0 operating system or higher on the SAPHIR side (see SAPHIR documentation).

2.2 Mounting

Follow the instructions below for mounting the RCC card on the Saphir controller.



1. Power off.
2. Dismounting the two forward outside screws on cover with a screw-driver type Torx 10 or a flat chisel.
   Note! Connect yourself to earth to avoid static electricity that could seriously damage the circuit card.
3. Mount metal fixing supports.
4. For ACX32, place the card with belonging cover plate in the “Com 1” slot.
5. Check that the card is correct connected.
6. Fix card with the screws that are in the kit.
7. Remount the Cover of the controller.
8. Power on.

2.3 Communication

2.3.1 IP address assignment

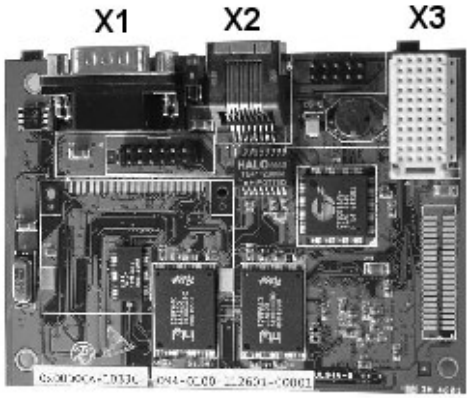
IP address assignment is either dynamic via DHCP server, or it can be manually preselected via HMI.
The present IP address can also be read via HMI.

Network

RCC must be properly logged on to the network, or the RCC card cannot be accessed via TCP/IP. Additionally, all network services, such as the integrated Web server or OPC server, will not be accessible.

2.3.2 Connection of TCP/IP

Follow the instructions below to set up the TCP/IP connection.



1. Commissioning unit with all settings before starting to install TCP/IP.
2. Attach the network cable to connector X2.
3. Restart by switch off the power.
4. Log in with password 2000.
   Navigate to menu “Systemparameter – Communication – RCC-Configuration”
   Here can the IP-address be read out or changed.
5. If a DHCP-server exist the given IP-address could be read.
6. If an own IP-address should be entered, then enter menu “Change IP”
   Change “DHCP” to “Fixed”. Then write the new address. To confirm new address change “apply” to “Yes”.
7. Restart by switch off the power.

2.3.3 Name resolution (WINS)

RCC can, however, log on to a WINS server if there is one present on the network.
If logon is successful, the corresponding WINS name can be used to access the device from that time onwards.
You can easily determine the WINS name from the sticker on the card:

MAC address

- The top number on the sticker is the RCC's MAC address. It always has the form 00 A0 03 FF xxxx, where xxxx is a sequential number.
- The WINS name is made up of the prefix SBT_RCC_V2_ and xxxx (i.e. the last four digits of the MAC address).

Example:

The MAC Address on the sticker is 00 A0 03 FF 0AC1. Therefore, the resultant WINS name is SBT_RCC_V2_0AC1.

The WINS server should be able to resolve a '`ping`' on the name, and it should display the present IP address.

2.3.4 Connecting to the Web/FTP server via Internet Explorer

Web server

To establish a successful connection to the Web server, use the WINS address or the IP address.

Example: *"http://SBT_RCC_V2_0AC1/" or "http://146.253.69.197/"*

FTP server

To establish a successful connection to the FTP server, use the same address as for the web server, but replacing "**http://**" with "**ftp://ADMIN@**".

Example: *"ftp://ADMIN@SBT_RCC_V2_0AC1/"*

Password FTP Server

Log in with:
User name: ADMIN
Password: SBTAdmin!

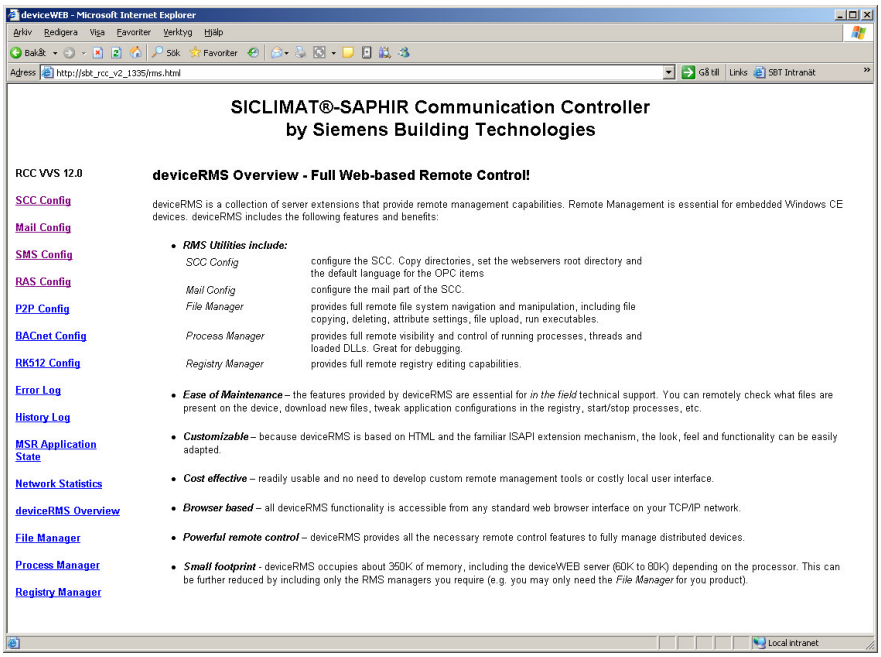
2.4 Configuration

The RCC-card has to be configured to handle OPC communication with the right OPC tags. Follow the step-by-step instructions below to set up the OPC language.

Instruction

1. Ping the RCC card with the WINS or the IP address to test the communication.
   Example: *(WinStart->Run->Open "CMD") C:\>ping sbt_rcc_v2_0AC1*

2. Connect to the Web server with the WINS or the IP address via Internet Explorer.
   Example: *"http://SBT_RCC_V2_0AC1"*
   If RCC VVS >12SP1 then click on the link "Open RMS" at the front page otherwise fill in the *"/rms.html"* in the address field.
   Example: *"http://SBT_RCC_V2_0AC1/rms.html"*

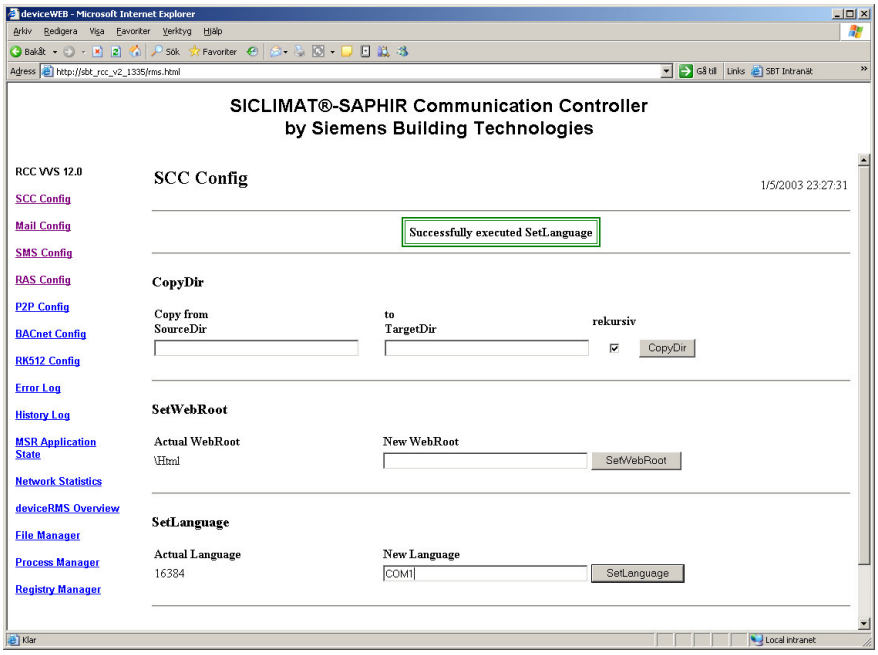


RCC Version

At the top to the right the actual version for the RCC card is shown. The version has to be VVS12 or higher for OPC to work. (If no version is displayed, the RCC card may be to old). The RCC version can also be found under "Treeview/Device/Version".

OPC settings

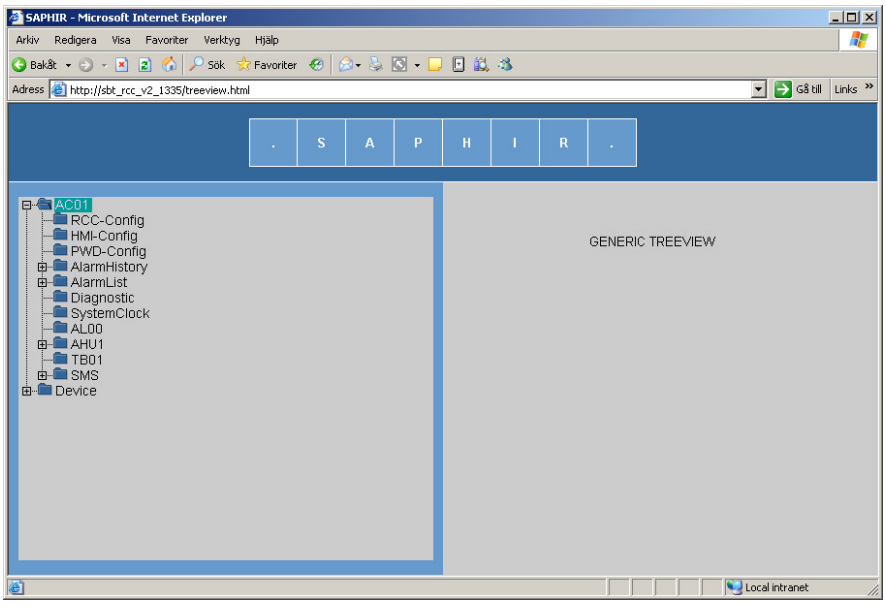
3. For VVS12 click on the ”SCC config” and for VVS>12SP1 and higher click on the ”OPC config”.
   Type COM1 (without space) at “New Language” and click “Set Language”.
   Actual language will then be “16384”.



4. Restart ACX32 by switch off the power.

Treeview

5. Test the OPC language with the treeview that actually shows the OPC addresses by click the ”Open Treeview” at the front page.



Extract the tree (AHU1) to see that it only is a 4 digits character that is shown.

⚠ Microsoft java client or Java runtime ver>5.0 update6 must be installed and activated in Internet Explorer, to see the treeview. Otherwise you can use an OPC Client to see that you have the configuration right.

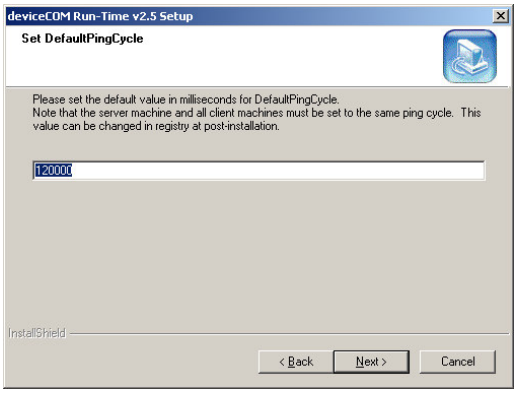
3 OPC Communication

3.1 Configure the Client PC

To communicate with the RCC card a special driver (DeviceCOM) must be used and installed in the client PC and the dll in “Windows/System32” “OPCproxy.dll” must be registered. All RCC cards must then be registered with a special program to have the OPC communication to work.
Follow the step by step instructions below to set up the Client PC.

Instruction

1. Install DeviceCOM (DeviceCOMRun-TimeV25.exe).
   Accept the settings about ”DefaultPingCycle” and click ”Next”.



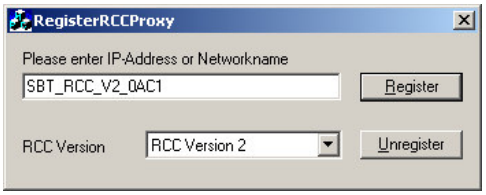
⚠ Ignore any warning message that may occur, and finish the installation.

Register dll

2. Register the OPCproxy.dll with the regsvr32 command or run the Reg.bat file.
   (WinStart->Run->Open“CMD”) C:\>regsvr32 c:\windows\system32\opcproxy.dll

Register RCC

3. Use the program RegisterRCCProxy.exe to register those RCC cards that shall be used with OPC. Use the WINS name or the IP address.



If the IP is registered then the IP must be used further on and vice versa.

If the communication is OK this message should appear.

⚠ This program use dynamic UDP port and if a firewall must be passed, this program must be excluded in the firewall settings.

Alternative communication

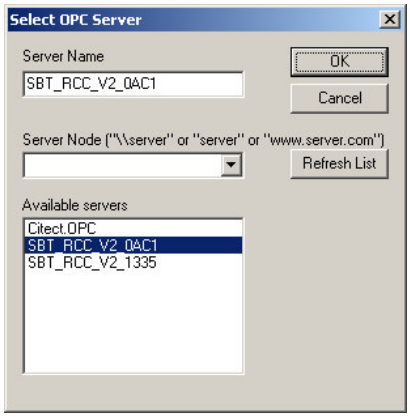
One alternative to above is to use the Remote OPC, which is an OPC server that are installed in the client PC and can communicate with the Saphir via TCP/IP or modem. See manual for Remote OPC for further information.

3.2 Test OPC Communication

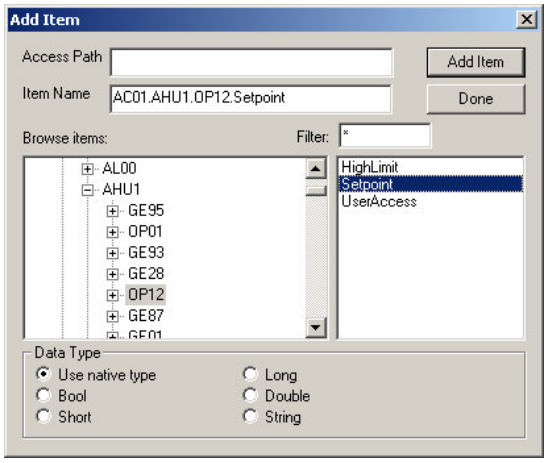
The OPC communication can be tested from the client PC via an OPC Client, like the OPCClient.exe that are described below.

Instruction

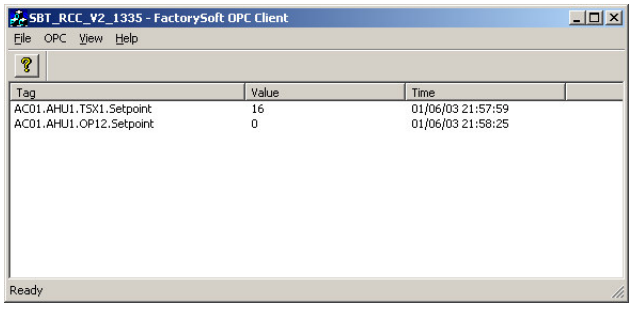
1. Start OPCClient.exe.
2. Go to menu OPC and Connect…



3. Mark the actual RCC card and click “OK”.
4. Go to the menu OPC and Add Item…



5. Extract the tree and mark a value. Then ”Add Item” and ”Done”.
6. Actual values should then appear in the list.



OPC tag address

The Tag column shows the actual OPC address that should be used for communication with that item. *Example ”AC01.AHU1.TSX1.Setpoint”*

4 OPC server functionality

This chapter explains the supplementary tool for the ACX52.22 RCC card in greater detail.
In order to do so, the functionality of the OPC server is described in conjunction with the SAPHIR ACX32 and ACX34… controller from VVS 3.0.

4.1 General

OPC Server version

The RCC card's OPC server supports OPC as per specifications 1.0a and 2.0, and can be accessed either via deviceCOM or RemoteOPC from an OPC client.

4.1.1 deviceCOM

The basic technology for communication with other devices via a TCP/IP connection is deviceCOM. deviceCOM supplies a connectivity framework between Windows CE-based devices and an enterprise's networked computers, through Microsoft's Web solution platform.

This server is not DCOM-enabled. A special software component (DeviceCom) has to be installed on the client PC so that an OPC client can access the server functionality.

When using deviceCOM and access to the OPC server, the server will be local in the client PC even if the OPC servers actually are on the RCC cards.

4.1.2 Remote OPC

The RemoteOPC application is an OPC DA server as well as a management function for RCC dial-up connections that runs on the WinXP or Win2000 operating system in the client PC. The connection to the data sources (Saphir RCCs) is established via dial-up modem links. The number of dial-up connections that can be established simultaneously is limited by the hardware used (number of COM ports with modems). The number of RCCs that can be managed is theoretically unlimited.

See manual for Remote OPC for further information.

4.1.3 COV handling

The kernel uses the object handler's COV handler to update values, which basically means:

- Only values defined with COV not equal to COV_NO (0x02) in the object handler documentation (CE2P3695en) are updated automatically.
- Values with COV_NO (0x02) are only read when the item is added to the client, or if a "read from device" (not "read from cache") is performed.
  Additionally, the OPC server automatically performs a "read from device" if an OPC item is written to.

For each ObjectHandler object that is dependent on a COV threshold, an additional item with the name "COV1" is created.
If an object has two COV thresholds, two items with names "COV1" and "COV2" are created.

The values of the COV thresholds are determined by the following procedure:

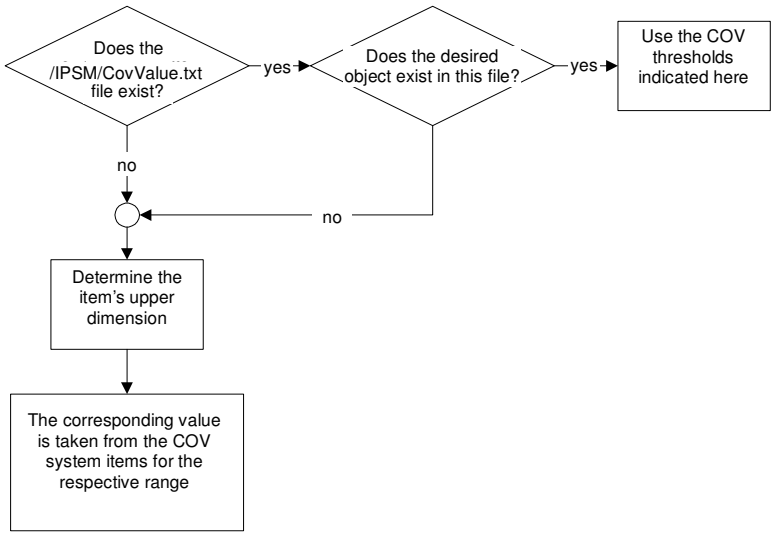


Figure 14: Determining the values of COV thresholds

The "CovValue.txt" file contains the respective COV values for all objects.
This file can also be copied to other RCC controllers in order to be able to retain all settings for OEM customers.

The file is created in the "**\IPSM**" directory.
The file is created by setting the "**Device.COV.COV Save File**" item to "**Active**".
Unlike previously, it is not the object handler that stores the COV thresholds; instead it is the respective client, in this case the RCC card, that has to remember the data.

The default COV threshold is determined by the dimension upper limit. Afterwards, the OPC item is used (from "Device.COV.COV x"), and that value is entered.

Example:
If, for example, the OPC item has the dimension +64, the threshold from the value of the "Device.COV.COV 100" item is used.
Only the values have to be changed in order to change the default thresholds.

Since **a restart is required** for all items to operate with the new default values, the setting must first be permanently saved with "**Device.COV.COV persistant**".

4.1.4 OPC properties

Properties are also created for each OPC item.
In addition to the default properties, the OPC server also creates the following:

Name	ID	Description
EU Units	100	This is the dimension text, or the enumeration text in case of an enumeration. The enumeration text is delimited by "*".
High EU	102	Upper limit (dimension) of the OPC items
Low EU	103	Lower limit (dimension) of the OPC items

4.2 OPC item generation

The current OPC server is based on the object handler, and it utilizes foreign language support. If no language change is performed on the RCC card (using the "**SetLanguage**" function), one OPC item each is created for all objects and members. Additionally, the RCC controller itself also creates several OPC items (system items) that signalize internal information.

4.2.1 System items

The following OPC items are created in the "**Group Device**" group:

- "Statistics" group Items that provide information on the number of OPC items and objects.
  Memory information is also indicated.
- "COV" group Items for setting and storing COV values
  (detailed description under COV handling)
- "Version" group All version numbers of the Rainbow components.
  Required by the hotline in case of a service request.

4.2.2 Object handler items

A separate OPC item is created for each object and member.
This makes all values operable via OPC or web interface.
Additionally, the OPC groups exactly reflect the object handler's hierarchy.
As already mentioned under COV Handling, one or two COV items may be created for each object. The names of the OPC items are created from the object names used by the object handler (0x1100).

4.3 Troubleshooting

All instructions is described in this document.

General
- The Saphir controller must be restarted after IP and OPC configuration.

Network
- When use of Fixed IP address, change parameter DHCP to Fixed, change IP address, confirm by change "apply" to "Yes" and restart the controller.
- Try to ping the controller if the communication is not working. If the ping fails something is wrong in the network or the IP settings.

RCC version
- The version has to be VVS12 or higher for OPC to work.
  The RCC version can be found under "Treeview/Device/Version".

Treeview
- Microsoft java client or Java runtime ver>5.0 update6 must be installed and activated in Internet Explorer, to see the treeview.

Register RCC
- Check the TCP/IP network (ping command) and that you have the correct address to the RCC card (do not mix up 0 Zero with the letter O).
- The program Register RCC proxy.exe must be excluded in a firewall.
- The opcproxy.dll must be registered.

DeviceCOM
- DeviceCOM use UDP port 11211 (Default), this port must be open in a firewall.

5 OPC Object types and members

This chapter explains the Object handler and the members that can be used for each object type. Recommended members to use with OPC are marked, other members should be used with carefulness, especially the “ValueDectection” member.

5.1.1 Setpoint: Real

MemberID	Member Name	Description
0x0000	UserAccess	Specifies operation privilege. The member setpoint (0x0003) can only be changed in "Man".
0x0001	HighLimit	High input limit for member setpoint (0x0003)
0x0002	LowLimit	Low input limit for member setpoint (0x0003)
0x0003	Setpoint	Valid setpoint

5.1.2 Setpoint: Enum

MemberID	Member Name	Description
0x0000	UserAccess	Specifies operation privilege. The member setpoint (0x0002) can only be changed in "Man".
0x0001	HighLimit	High input limit for member setpoint (0x0002)
0x0002	Setpoint	Valid setpoint

5.1.3 Messure (Analog input)

MemberID	Member Name	Description
0x0000	ValueDetection	This parameter can be used to deactivate the detection of parameters 0x1200 and 0x0009. These members are then also writeable.
0x1200	ValueFault	"Active" indicates that this measured value is in an error state
0x0001	HighLimit1Active	Indicates that the value is above the high alarm limit (0x000A).
0x0002	HighLimit2Active	Indicates that the value is above the high warning limit (0x000B).
0x0003	LowLimit2Active	Indicates that the value is below the low warning limit (0x000C).
0x0004	LowLimit1Active	Indicates that the value is below the low alarm limit (0x000D).
0x0005	SlidingLimits	As long as this parameter is active, the limits are read cyclically via the "HIL", "HIWL", "LOWL" and "LOL" inputs. The corresponding members can then not be overwritten with the ObjectHandler.
0x0006	FaultStored	As long as this parameter is active, the fault (0x1200) is stored, i.e. it must be reset with the appropriate message class (0x0007).
0x0007	MessageClass	Fault message class (0x1200)
0x0008	SuppressLimitCheck	This member can be used to suppress limit value monitoring. As long as this parameter is active, out-of-limits conditions do not produce a database entry, and the parameters (0x0001…0x0004) are set to zero.
0x0009	PresentValue	This parameter signalizes the measured value without an error.
0x000A	HighLimit1	High alarm limit
0x000B	HighLimit2	High warning limit
0x000C	LowLimit2	Low warning limit
0x000D	LowLimit1	Low alarm limit
0x000E	InputCorrection	Offset for input value connection. It is added to the physical input value, then signalized at member 0x0009.
0x000F	PT1Filter	Delay time in seconds of the PT1-element for smoothing. As long as the parameter is set to zero, no smoothing occurs.

5.1.4 PosCommand (Analog output)

MemberID	Member Name	Description
0x0000	ValueDetection	This parameter can be used to deactivate the detection of present position 0x000A and fault 0x0001. In this case, member fault is also writeable. The present position 0x000A is set equal to the setpoint position 0x000D.
0x0001	Fault	Indicates the stored fault.
0x0002	RemoteActuating	If inactive, the controller has no access to the hardware. The present position is indicated in each case. The "POSN" output is set to 0.
0x0003	ApplicationControl	Indicates that the step setpoint (0x000B) is specified by the application in automatic mode (0x0003).
0x0004	CTRLLoopLock	Indicates that the control element is not available to the controller.
0x0005	UserAccess	Specifies operation privilege. The member position setpoint (0x000D) can only be changed in "Man".
0x0006	Forcing	Indicates that override control is active.
0x0007	MessageClass	Fault message class (0x0001)
0x0008	PresentValue	Control element feedback signal
0x0009	HighLimit	The high control limit of the control element can be entered here.
0x000A	LowLimit	Low control limit of the control element
0x000B	Setpoint	Indicates the present position setpoint. Can be changed by the ObjectHandler if 0x0003 = TRUE.
0x000C	Sensitivity	Accuracy of the control element. Only setpoint changes that are greater than this member are passed to the "POSN" output.
0x000D	Output Type	Indicates the control signal type: 0 = analog output, analog feedback signal 1 = digital output, feedback signal calculated using actuating time 2 = digital output, analog feedback signal
0x000E	Digital:OpenTime	The time the valve requires to fully open.
0x000F	Digital:CloseTime	The time the valve requires to fully close.
0x0010	Digital:LongSync	Default value FALSE: If TRUE, the outputs remain active at the end positions. If FALSE, the signal only remains active for 3x the time.

5.1.5 Message (Alarms)

MemberID	Member Name	Description
0x0000	ValueDetection	This parameter can be used to deactivate the detection of parameter 0x0001. This member is then also writeable.
0x0001	CurrentState	"Active" means that this status message is active: State text from member 0x1101
0x0002	StoredState	Indicates the stored state: State text from member 0x1101
0x0003	WorkingContact	"Active" means normally open contact: Otherwise normally closed contact, i.e. a signal at the "DI" input is the good state
0x0004	MessageClass	Fault message class (0x0002)
0x0005	FaultStored	As long as this parameter is active, the fault (0x0002) is stored, i.e. it must be reset with the appropriate message class (0x0004).
0x0006	DelayEnable	Delay in seconds after enable
0x0007	DelayMessage	Minimum time that a fault must be present before a message is actually generated (flutter protection).

5.1.6 SwitchCommand (Digital outputs)

MemberID	Member Name	Description
0x0000	ValueDetection	This parameter can be used to deactivate the detection of PresentStage (0x000A) and Fault (0x0001) parameters. In this case, the Fault member is also writeable. PresentStage (0x000A) is set equal to SetpointStage (0x000B).
0x0001	Fault	Indicates a fault. Is generated if the PresentStage fails to follow the SetpointStage within the runtime (DELFB).
0x0002	RemoteActuating	If inactive, the controller has no access to the hardware. The present state is displayed, and feedback signal monitoring is suppressed (0x0001). The "COM" output is set to step 0.
0x0003	UserAccess	Specifies operation privilege. The member step setpoint (0x000B) can only be changed in "Man".
0x0004	SupressFeedback	Suppresses runtime monitoring (0x0001)
0x0005	Forcing	Indicates that override control is active. The application specifies the step setpoint.
0x0006	Optimizing	Activates and deactivates the optimization function.
0x0007	MessageClass	Fault message class (0x0001)
0x0008	ApplicationControl	Indicates that the step setpoint (0x000B) is specified by the application in automatic mode (0x0003).
0x0009	OptDirectionHigh	Optimization is achieved by stepping up.
0x000A	PresentStage	Switching command feedback signal
0x000B	SetpointStage	Indicates the present step setpoint. Can be changed by the ObjectHandler if 0x0003 = TRUE.
0x000C	OptimizeStage	Specifies the optimization step.
0x000D	MaxStage	Maximum permissible switching step. 1 signifies, *for example 0=off and 1=Step 1 is permitted*.

5.1.7 Counter

MemberID	Member Name	Description
0x0000	ValueDetection	This parameter can be used to deactivate the detection of parameter 0x0001. This member is then also writeable.
0x0001	ValueFault	Active indicates that this counter value is in an error state.
0x0002	HighLimitActive	Indicates that the value is above the alarm limit (0x000E).
0x0003	CountValueLost	Indicates that the counter value has missed pulses.
0x0004	UserAccess	Must be set to "Man" in order to delete (0x0006) or set (0x0007) the counter value. Always set to "Man" by default.
0x0005	OverflowCounter	Indicates an overflow of the internal counter.
0x0006	EraseCounter	Sets the counter to zero.
0x0007	SetCounter	Adds the offset (0x000C) to the present counter value (0x000B)
0x0008	MessageClass	Fault message class (0x0001)
0x0009	Me.ClassHighLimit	Limit for the resultant value (0x000A)
0x000A	PresentValue	Resultant value of the counter (dimensioned)
0x000B	CounterValue	Internal pulse counter value
0x000C	OffsetCounter	Offset that is added to the present counter value (0x000B) during setting (0x0007)
0x000D	ImpulseValue	Pulse counter. The resultant value 0x000A is calculated from this value and member 0x000B.
0x000E	HighLimit	Resultant value high limit

5.1.8 Time Plan: Day

MemberID	Member Name	Description
0x0000	AggregateName	Name of the controlled unit
0x0001	Valid	TRUE if the schedule is valid and active
0x0002	Hour	Switching hour
0x0003	Minute	Switching minute
0x0004	Value	Value that should apply from the point in time indicated

5.1.9 Time Plan: Week

MemberID	Member Name	Description
0x0000	AggregateName	Name of the controlled unit
0x0001	Valid	TRUE if the schedule is valid and active
0x0002	StartDay	Starting point: day of week (0=Mon … 6=Sun)
0x0003	StartHour	Starting point: hour
0x0004	StartMin	Starting point: minute
0x0005	EndDay	End point: day of week (0=Mon … 6=Sun)
0x0006	EndHour	End point: hour
0x0007	EndMin	End point: minute
0x0008	Value	Value that should apply during the period indicated

5.1.10 Time Plan: Year

MemberID	Member Name	Description
0x0000	AggregateName	Name of the controlled unit
0x0001	Valid	TRUE if the schedule is valid and active
0x0002	StartDay	Starting point: day
0x0003	StartMonth	Starting point: month
0x0004	StartHour	Starting point: hour
0x0005	StartMin	Starting point: minute
0x0006	EndDay	End point: day
0x0007	EndMonth	End point: month
0x0008	EndHour	End point: hour
0x0009	EndMin	End point: minute
0x000A	Value	Value that should apply during the period indicated

5.1.11 LoopController

MemberID	Member Name	Description
0x0000	Enable	Enables the controller for closed-loop control.
0x0001	Fault	Indicates the stored fault.
0x0002	MessageClass	Fault message class (0x0001)
0x0003	Hand	If this member is set, the controller is deactivated.
0x0004	InvertProportional	Used to invert the control algorithm. Additionally, the behavior in the disabled state also changes. *Can be used for limiting controllers, for example.*
0x0005	Status	Indicates the controller's status. If multiple states are active, the priority of the listed numbers applies, i.e. the highest priority wins. Value – Meaning – Priority 0 – Controller disabled – 5 1 – Controller at high limit – 3 2 – Controller at low limit – 2 3 – Within control range – 5 4 – Control element not available – 4
0x0006	PresentValue	Present value
0x0007	Setpoint	Setpoint
0x0008	CTRLOutput	Present requested position setpoint of the control element (controller output)
0x0009	ProportionalFactor	Proportional factor (gain) of the PID-controller
0x000A	IntegralFactor	Integral factor; integral-action time in seconds (0=I-component deactivated)
0x000B	DifferentialFactor	Differential factor in seconds (0=D-component deactivated)
0x000C	HighLimit	Maximum permissible positioning signal output value
0x000D	LowLimit	Minimum permissible positioning signal output value

5.1.12 CascadeController

MemberID	Member Name	Description
0x0000	Enable	Enables the controller for closed-loop control
0x0001	Fault	Indicates the stored fault
0x0002	ApplicationControl	Indicates that the setpoint (0x0009) is specified by the application in automatic mode (0x0003).
0x0003	UserAccess	Specifies operation privilege. The member setpoint (0x0009) can only be changed in "Man".
0x0004	MessageClass	Fault message class (0x0001)
0x0005	Hand	If this member is set, the controller is deactivated.
0x0006	Status	Indicates the controller's status. If multiple states are active, the priority of the listed numbers applies, i.e. the highest priority wins. Value Meaning Priority 5 Controller disabled 5 6 Controller at high limit 3 7 Controller at low limit 2 8 Within control range 5 9 Control element not available 4
0x0007	PresentValue	Present value
0x0008	Setpoint	Valid setpoint
0x0009	BasicSetpoint	Basic setpoint; can be changed by the ObjectHandler if 0x0002 = TRUE.
0x000A	CTRLOutput	Present requested position setpoint of the control element (controller output)
0x000B	ProportionalFactor	Proportional factor (gain) of the PID-controller
0x000C	IntegralFactor	Integral factor; integral-action time in seconds (0=I-component deactivated)
0x000D	WorkingPointDiff	Operating point difference
0x000E	HighLimit	Maximum permissible positioning signal output value
0x000F	LowLimit	Minimum permissible positioning signal output value
0x0010	DeadZone	Dead zone between the upper and lower setpoints. Calculated from the basic setpoint 0x0009.

6 OPC tag translation

6.1 Air Handling Units

OPC tags for IV Product LB20 v3.x application.

6.1.1 Setpoints, Temperature

OPC tag name	Description	Object type
GBE1	Basic setpoint temperature, Economy	Setpoint: Real
GBK1	Basic setpoint temperature, Comfort	“
DE10	Deadzone cooling, Economy	
DK10	Deadzone cooling, Comfort	
TSN1	Min setpoint supply air temperature, cascade control	
TSX1	Max setpoint supply air temperature, cascade control	
BO10	Presentation remote setpoint	Messure
TS41	Setpoint HRC frost protection	Setpoint: Real
TS51	Setpoint post-conditioning	“
TS80	Setpoint frostprotection, operating temperature	
TS81	Setpoint frostprotection, keeping warm	

6.1.2 Setpoints, Pressure / Flow

OPC tag name	Description	Object type
VS10	Setpoint flow supply air lowspeed	Setpoint: Real
VS11	Setpoint flow supply air highspeed	“
VS20	Setpoint flow exhaust air lowspeed	
VS21	Setpoint flow exhaust air highspeed	
VSX1	Max setpoint pressure/flow supply air	
VSX2	Max setpoint pressure/flow exhaust air	
DKV1	Deadzone fan compensation heating	

6.1.3 General settings / values

OPC tag name	Description	Object type
GE01	Setpoint frost protection alarm	Setpoint:Real/Enum
GE09	Activate Smoke damper function control	“
GE12	Time since last smoke damper function control	
GE13	Test Smoke damper function control	
GE15	Actual Fan runtime hours count	
GE22	Room setpoint, night purge	
GE28	Delay time, timer mode	
GE30	Limit unoccupied cooling	
GE31	Limit unoccupied heating	
GE36	Start setpoint summer compensation, temperature	
GE37	Stop setpoint summer compensation, temperature	
GE38	Delta setpoint summer compensation, temperature	
GE39	Start setpoint winter compensation, temperature	
GE40	Stop setpoint winter compensation, temperature	
GE41	Delta setpoint winter compensation, temperature	
GE42	Max deviation temperature alarm	
GE43	Max delta heating, displacement ventilation	
GE44	Max delta cooling, displacement ventilation	
GE46	Setpoint HRC frost protection alarm	
GE59	HRC efficiency alarm limit	
GE61	Actual HRC efficiency	
GE72	Setpoint flow alarm	
GE73	Setpoint pressure alarm	
GE77	Setpoint supply fan lowspeed, not controlled	

OPC tag name	Description	Object type
GE78	Setpoint supply fan highspeed, not controlled	
GE79	Setpoint exhaust fan lowspeed, not controlled	
GE80	Setpoint exhaust fan highspeed, not controlled	
GE91	Period of time between service for chiller machine	
GE98	Delta setpoint summer compensation, supply fan	
GE99	Delta setpoint winter compensation, supply fan	
G100	Delta setpoint summer compensation, exhaust fan	
G101	Delta setpoint winter compensation, exhaust fan	
G102	Start setpoint summer compensation, fan control	
G103	Stop setpoint summer compensation, fan control	
G104	Start setpoint winter compensation, fan control	
G105	Stop setpoint winter compensation, fan control	
G106	Start setpoint CO2, fan compensation	
G107	Stop setpoint CO2, fan compensation	
G120	Setpoint HRC defrost	
G122	Compensation flow setpoint exhaust fan	
G132	Setpoint CO2 return damper	
G133	Temperature compensation, supply/cascade control	

6.1.4 Temperature

OPC tag name	Description	Object type
GT10	Supply air temperature	Messure
GT20	Exhaust/Room air temperature	“
GT50	Universal temperature 1	
GT51	Universal temperature 2	
GT80	Frost temperature	
GT90	Outdoor temperature	

6.1.5 Pressure / Flow

OPC tag name	Description	Object type
GP10	Supply air pressure / flow	Messure
GP11	Supply air pressure, extra	“
GP20	Exhaust air pressure / flow	

6.1.6 Analog Inputs, Others

OPC tag name	Description	Object type
GQ10	Air quality sensor (Supply air / Room)	Messure

6.1.7 Analog Outputs

OPC tag name	Description	Object type
SV10	Heating	PosCommand
SV20	Cooling	“
SV40	Post-conditioning	
HD10	Heating recovery (HRC)	
FO10	Frequency converter Supply fan	
FO20	Frequency converter Exhaust fan	
VK10	Heating compressor	

6.1.8 Digital Outputs

OPC tag name	Description	Object type
ST10	Out door damper	SwitchCommand
ST50	Smoke damper	“
TF10	Supply fan 0 = Off, 1 = Lowspeed, 2 = Highspeed	
FF10	Exhaust fan 0 = Off, 1 = Lowspeed, 2 = Highspeed	
CP10	Heating pump / Electrical heater	
CP20	Cooling pump / DX step x	
DX10	Cooling DX step 1	
AL15	Alarm class B output	
AL16	Alarm class A output	

6.1.9 Digital Inputs

OPC tag name	Description	Object type
DI01	Status fire/smoke alarm input	Setpoint: Enum
DI02	Status HRC alarm input	“
DI03	Status heating alarm input	
DI04	Status cooling alarm input	
DI05	Status AUX alarm input	
DI06	Status filter alarm input	
DI07	Status HRC pressureguard alarm input	
DI08	Status smoke damper input	
DI09	Status supply fan alarm input	
DI10	Status exhaust fan alarm input	

6.1.10 Controllers

OPC tag name	Description	Object type
CT01	Frost controller	LoopController
CT02	Heating controller	“
CT03	HRC controller	
CT04	HRC frost protection controller	
CT05	Cooling controller	
CT06	Controller supply fan	
CT07	Controller exhaust fan	
CT10	Main controller (Cascade)	
XX10	Main controller Dz cooling (Cascade)	
CT11	Heating compressor controller	
CT14	Fan heating controller	
CT15	Fan cooling controller	
CT16	Post-conditioning controller (Extra controller)	
CT17	CO2 return damper controller	

6.1.11 Alarms

OPC tag name	Description	Object type
AL00	Reset Alarms	Setpoint: Enum
AL01	Fire / Smoke alarm	Message
AL02	HRC alarm	“
AL03	Heating pump alarm	
AL04	Cooling alarm	
AL05	AUX alarm	
AL06	Pressure / Flow control alarm supply air	
AL07	Pressure / Flow control alarm exhaust air	
AL09	Temperature deviation alarm	
AL10	Frost protection alarm	
AL11	Unit override alarm	
AL12	Smoke damper alarm	
AL13	HRC frost alarm	
AL14	HRC efficiency alarm	
AL15	Alarm class B output	SwitchCommand
AL16	Alarm class A output	“
AL19	Runtime alarm	Message
AL20	Filter alarm	
AL21	Room / Exhaust sensor alarm	
AL22	Out door sensor alarm	“
AL23	Supply air sensor alarm	
AL24	Frost sensor alarm	
AL25	Multifunction sensor 1 (Z-sensor 1) alarm	
AL26	Multifunction sensor 2 (Z-sensor 2) alarm	

6.1.12 Alarm delay time

OPC tag name	Description	Object type
AD09	Temperature deviation alarm delay time	Setpoint: Real
AD11	Unit override alarm delay time	“
AD14	HRC efficiency alarm delay time	
AD20	Filter alarm delay time	

6.1.13 Actual Operation mode / Setpoints

OPC tag name	Description	Object type
OP01	HMI service switch 0 = Auto, 1 = Off, 2 = Lowspeed, 3 = Highspeed	Setpoint: Enum
OP02	Actual fan mode 0 = Off, 1 = Lowspeed, 2 = Highspeed	“
OP03	External switch / Timer mode 0 = Auto, 1 = Off, 2 = Lowspeed, 3 = Highspeed	
OP06	Actual setpoint for temperature control	Messure
OP07	Actual operation mode 0 = Damperkick, 1 = Testtemp, 2 = Off 3 = Economy, 4 = Comfort, 5 = Startup 6 = Nightpurge, 7 = Unoccupied, 8 = Overrun	Setpoint: Enum
OP12	Emergency stop	“
OP14	Actual heating setpoint for temperature control	Messure
OP15	Actual cooling setpoint for temperature control	“

6.1.14 Operation mode control

OPC tag name	Description	Object type
TB01	BMS override timeprogram 0 = Internal TSP, 1= Off, 2 = Eco St1 3 = Eco St2, 4 = Comf St1, 5 = Comf St2	Setpoint: Enum
TB02	Saphir override timeprogram 0 = Internal TSP, 1= Off, 2 = Eco St1 3 = Eco St2, 4 = Comf St1, 5 = Comf St2	“

6.1.15 Time program

OPC tag name	Description	Object type
TD0x	Air handling unit, dayplan 0 = Off, 1 = Eco St1, 2 = Eco St2 3 = Comf St1, 4 = Comf St2	Time plan
TW0x	Air handling unit, weekplan	“
TY0x	Air handling unit, yearplan	
SD0x	SMS alarm routing, dayplan 0 = Off, 1 = Tel1, 2 = Tel2, 3 = Tel3, 4 = Tel4	
SW0x	SMS alarm routing, weekplan	
SY0x	SMS alarm routing, yearplan	
ED0x	External device, dayplan 0 = Off, 1 = On	
EW0x	External device, weekplan	

6.1.16 General

OPC tag name	Description	Object type
AC01	Air conditioning	
AHU1	Air handling unit 0 = Off, 1 = Eco St1, 2 = Eco St2 3 = Comf St1, 4 = Comf St2	Unit

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