

Efficient. Innovative. Sustainable.



Controlesta RCO

System Description



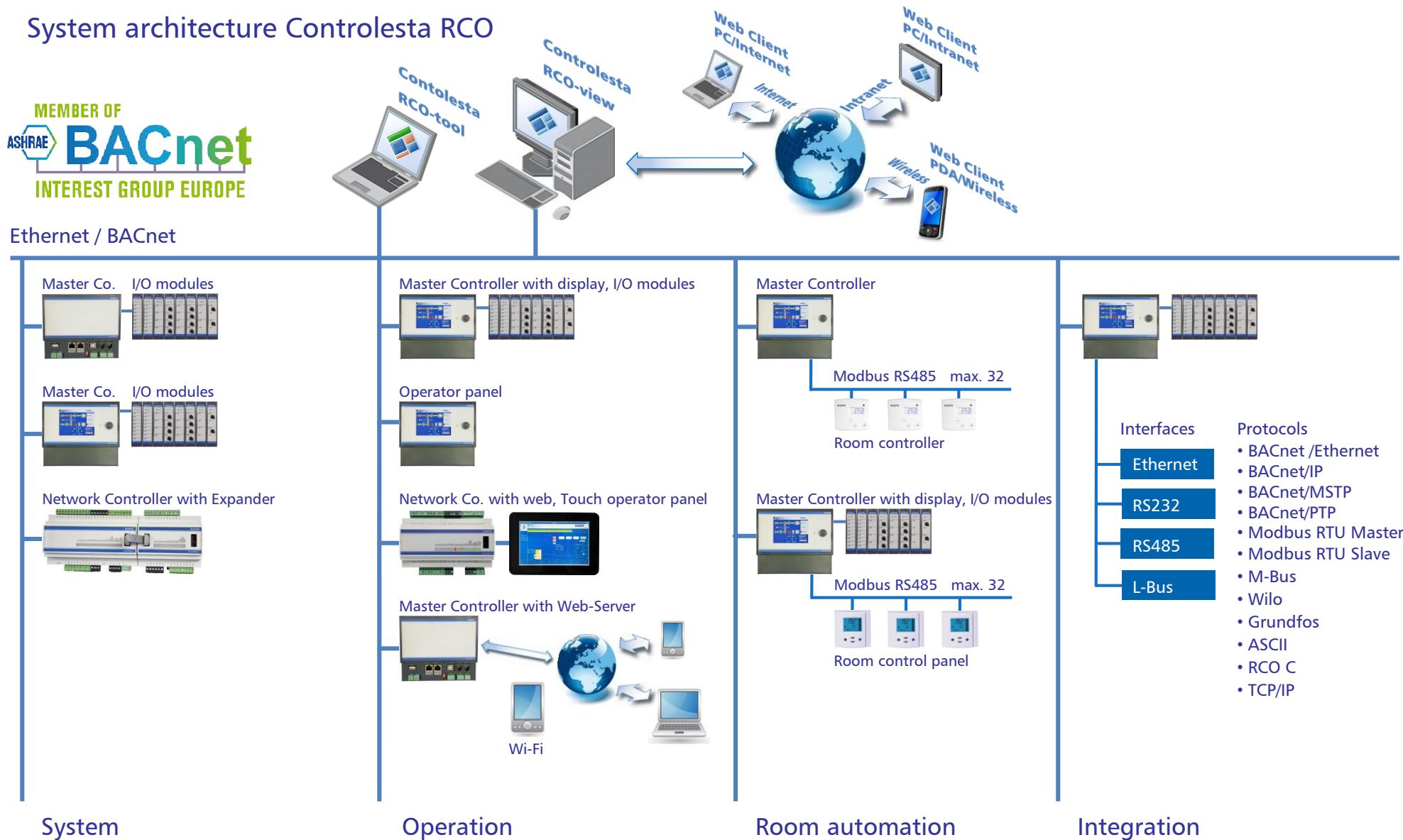
Online, at each time,
at each place



CONTROLESTA RCO System Description

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1. System architecture Controlesta RCO





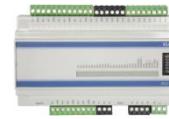
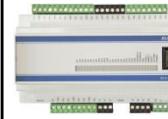
2. RCO System components

2.1 Master Controller

				RCO 900D-W	RCO 920D-W	RCO 921D-W
Colored graphical display 320x240	--	--	x	x	x	x
Program- and data memory SD-Card \leq 8GB	x	x	x	x	x	x
Interfaces RS232	2	2	2	2	2	2
RS485	2	2	2	2	--	--
Ethernet	2	2	2	2	1	1
L-Bus-1	1	1	1	1	--	--
L-Bus-2	1	1	1	1	1	1
Protocols RCO C-Bus	x	x	x	x	--	--
BACnet-Ethernet/IP	x	x	x	x	x	x
BACnet MS/TP	x	x	x	x	--	--
MODBUS Master/Slave	x	x	x	x	--	--
M-Bus	x	x	x	x	x	x
Wilo	x	x	x	x	--	--
Grundfos	x	x	x	x	--	--
Power supply 24 VAC/DC	x	x	x	x	x	x
Web server	--	x	--	x	--	x
Mounting DIN-rail	x	x	--	--	--	--
Front	--	--	x	x	x	x

2. RCO System components

2.2 Network-/Compact Controller

				
		RCO 800D-M W	RCO 830D-M W	RCO 850D-M
Inputs	Universal	0-10V, 0-20 mA, Sensor	8	8
	Digital	Potential, Counting input	6	6
Outputs	Analog	0-10V, 0-20 mA	4	4
	Digital	Relay (230V/4A)	4	4
Program and data memory	SD-Card \leq 8GB	x	x	x
Interfaces	RS232	1	1	1
	RS485 (1 x Display)	2	2	2
	Ethernet	1	1	--
Protocols	RCO C-Bus	x	x	x
	BACnet-Ethernet/IP	x	x	--
	BACnet MS/TP	x	x	--
	MODBUS Master/Slave	x	x	--
	M-Bus	x	x	--
	Wilo	x	x	--
	Grundfos	x	x	--
Power supply	24 VAC/DC	x	x	x
Web server		--	x	--
Mounting	DIN-rail	x	x	x



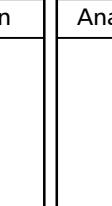
2. RCO System components

2.3 Expander I/O modules

			
Inputs	Universal	0-10V, sensor	8
	Digital	Potential, counting input	--
Outputs	Analog	0-10V	4
	Digital	Relay (230V/4A)	4
Interfaces	I/O Bus		x
Power supply	24 VAC/DC via Controller		x
Mounting	DIN-rail		x

2. RCO System components

2.4 Slave modules

	Universal-In	Digital-In	Analog-Out	Analog-Out	Digital-Out	Digital-Out	3-Punkt-Out	3-Punkt-Out
								
Inputs	Universal 0-10V, sensor	8	--	--	--	--	--	--
	Digital Potential, counting input	--	8	--	--	--	--	--
Outputs	Analog 0-10V	--	--	4	4	--	--	--
	Digital Relay (230V/4A)	--	--	--	--	4	4	--
	Tri-state Relay (230V/4A)	--	--	--	--	--	2	2
Manual override	Auto-0-1	--	--	--	--	x	--	--
	Auto-close-0-open	--	--	--	--	--	--	x
	Auto-0-100%	--	--	--	x	--	--	--
Feedback signal	--	--	--	x	--	x	--	x
L-Bus-1	--	--	--	--	--	--	--	--
L-Bus-2		x	x	x	x	x	x	x
Power supply	24 VDC	x	x	x	x	x	x	x
Mounting	DIN-rail	x	x	x	x	x	x	x
	Front	x	x	x	x	x	x	x

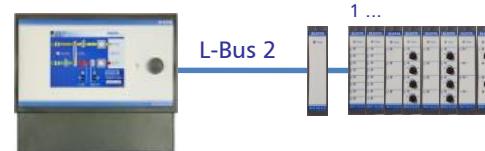
2. RCO System components

2.5 Power modules

	Power-Modul	Power-Bridge-Modul
	RCO 300D-P	RCO 302D-P
Functions	power supply for the I/O-Modules	x
	galvanic isolation L-Bus A to L-Bus B	--
L-Bus-1	--	--
L-Bus-2	x	x
Power supply	24 VAC/DC	x
Mounting	DIN-rail	x
	Front	x

Up to 8 I/O-modules

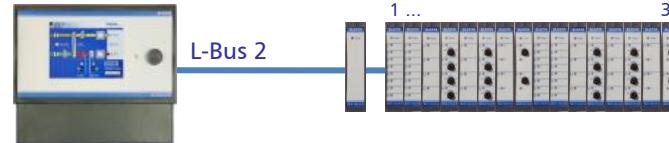
RCO 921D-M/W



In case the load becomes higher than 12W a power module must has to be used.

More than 8 I/O-modules

RCO 900/920D-M/W RCO 300D-P



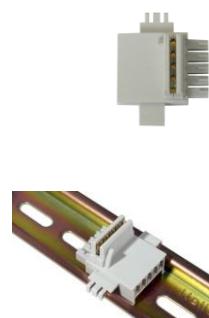
2. RCO System components

2.6 Mounting variants

Panel door mounting



DIN-rail mounting



Connection of the modules

T-Bus-Connector

Functions:

- Power supply
- Bus connection



Advantages:

- No wiring
- No wrong connections
- Slaves modules can be easily changed through the use of Plug in Philosophy
- Exchange of the modules during operation



2. RCO System components

2.7 Operator panels

						
Display	Size	3,5"	3,5"	3,5"	3,5"	3 lines by 30 characters
Resolution		320x240	320x240	320x240	320x240	--
Operation	Key	x	x	x	x	x
	Touch	--	--	--	--	x
Menu	Text	x	x	x	x	x
	Graphic	x	x	x	x	--
Menu structure is freely configurable		x	x	x	x	x
Display of data points and time schedules		x	x	x	x	x
Alarm indication / acknowledgement		x	x	x	x	x
Access to all Master Controller within the network		x	x	x	x	x
Password protected		x	x	x	x	x
Free config. col. graph. display with animation of objects		x	x	x	x	--
Display of graphical trend-logs		x	x	x	x	--
Power supply		24 VDC	24 VDC	24 VDC	24 VDC	over RS485
Connection	Network	x	x	x	x	--
	autarkic	x	x	x	--	RCO 8... RCO 8/9...D-W
Web server		--	x	--	--	--
Mounting		x	x	x	x	x

2. RCO System components

2.8 Embedded Web server



The Web-Server provides the visualization and operation of plant data and alarms with a standard Web-Browser. With the help of the Web-Browser every PC becomes an operator terminal. The installation can be accessed at any time directly at the control panel or via Intranet or remote via the Internet.

Simple WEB-Engineering

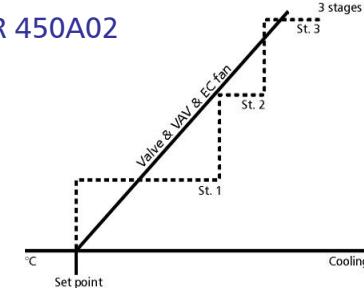
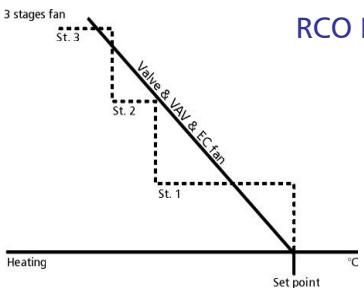
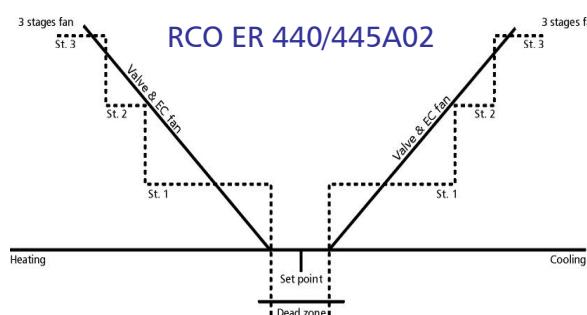
The web pages are generated time efficient through the simple conversion of the graphical operator menu of a web enabled Controller. In a network with several Controllers only one web enabled Controller is necessary to ensure the remote control of all Controllers via the Web-Browser.

2. RCO System components

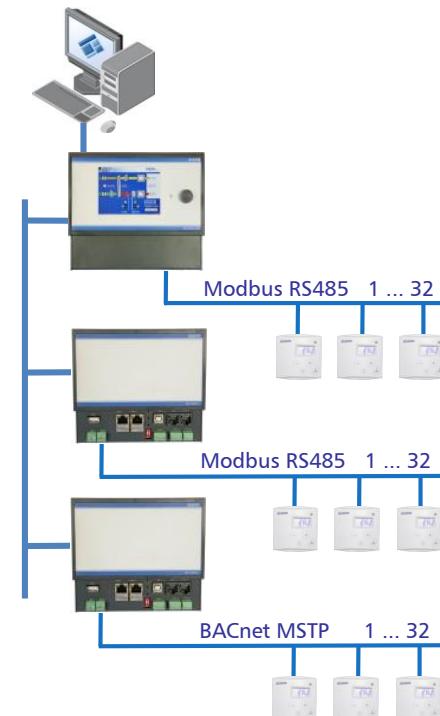
2.9 Single room controller



Function	RCO ER440A02	RCO ER450A02	RCO ER445A02	RCO 030A00
Inputs				
PIR / day-night switch	1	--	1	--
Summer/winter, day-night switch	--	1	--	--
ext. NTC 10k sensor / contact	1	1	1	--
0-10 VDC	--	--	--	1
Outputs				
0-10 VDC	4	3	4	--
Relay (24 VAC/1A)	2 x 2-ON-OFF	1 x 2- or Tri-state	2 x 2-ON-OFF	--
Relay (230 VAC/10A)	--	--	--	3 x ON-OFF
Protocols				
MODBUS Slave	x	x	--	--
BACnet MSTP	--	--	x	--
Power supply	24 VAC/DC	x	x	x
Mounting	Wall/flush-mounting box	x	x	--
	--	--	--	x



Integration into an RCO-network

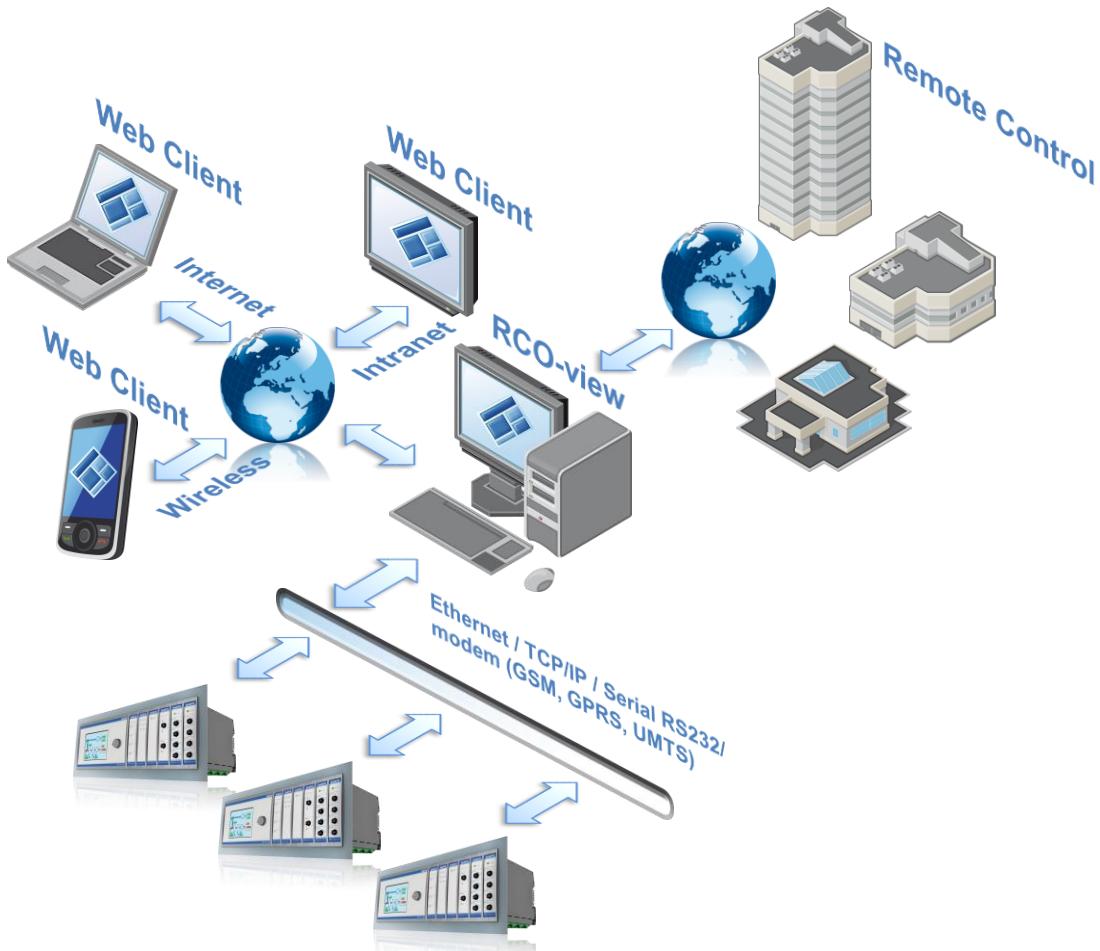


Operating mode:

- Day
- Night
- Frost
- Heating
- Cooling
- Heating-Cooling



3. Building Management Software RCO-view



Web-based Building Management Software

Technology

- Apache server
- SQL data base
- Standard browser
(Firefox from 3.6, IE 8.0 or 10.0, Chrome 33.xxx)
- MS .Net Framework Technology

Features

- Animated visualizations for graphical operations
- Alarm and messenger management
- Access management for user groups und users
- Time schedules
- Event logs
- Archiving and analysis of historical data
- Online trending
- Multi site handling

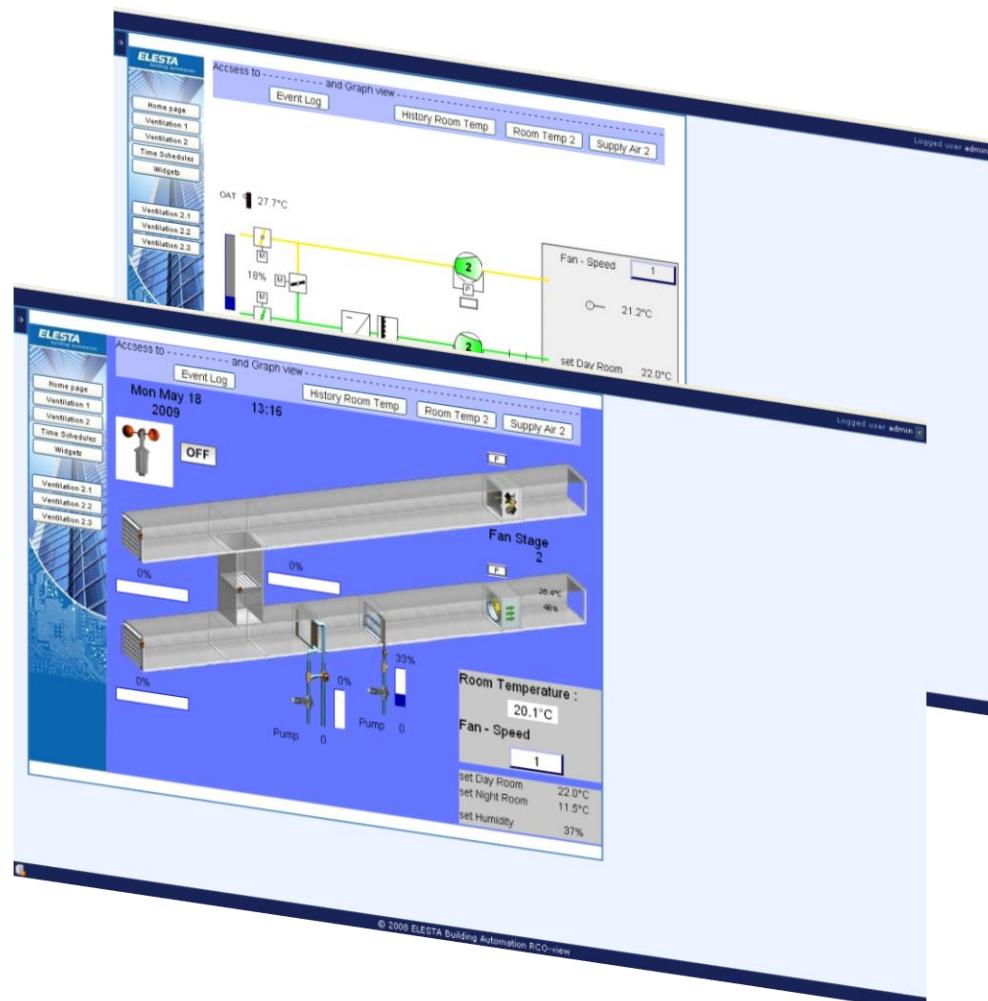


3. Building Management Software RCO-view

3.1 Animated visualizations for graphical operations

Features

- Monitoring of values
- Change of values, e.g. set points, time schedules
- Animated graphics 2D/3D





3. Building Management Software RCO-view

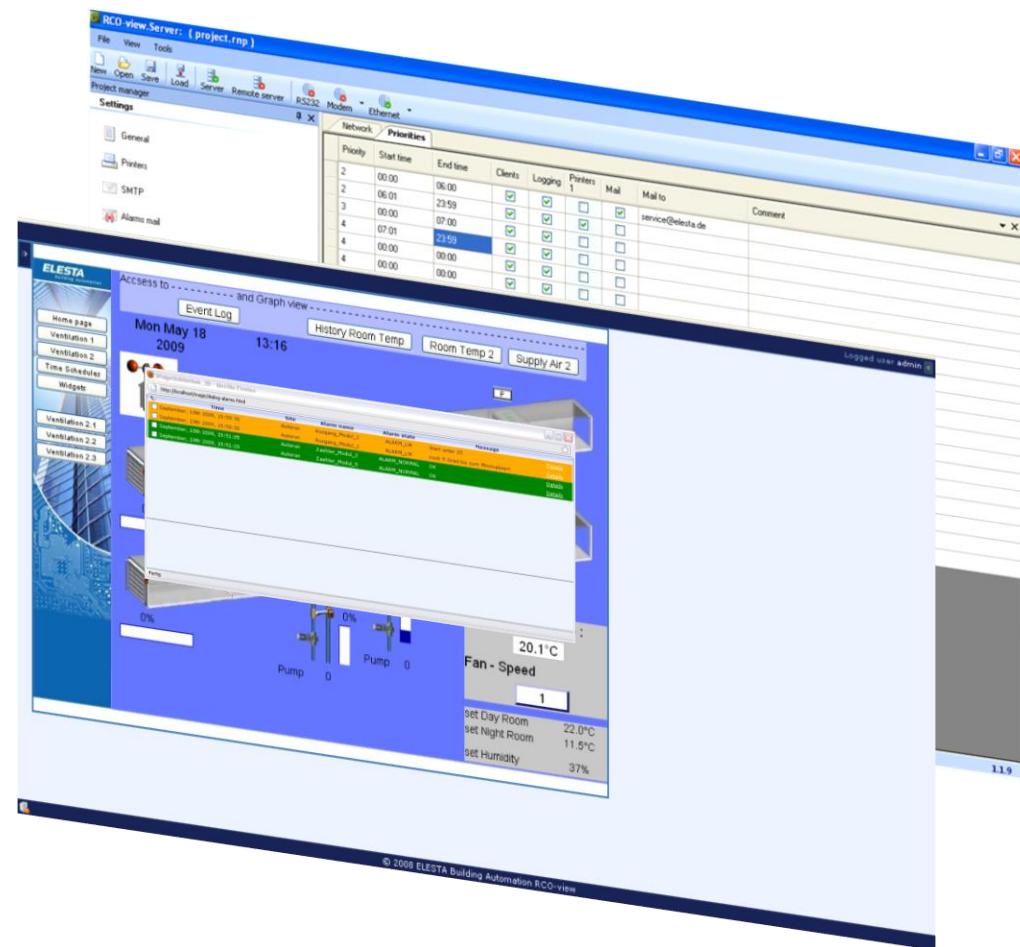
3.2 Alarm Management

Features

- Priority- and event-controlled alarm and messenger management

- Time and priority dependent dispatch of / to
 - e-mail
 - sms (via provider)
 - printer
 - client (alarm window)

- Alarm log-files



3. Building Management Software RCO-view

3.3 Access management for user groups and users

Features

- Access control through username and password
- Definition of user groups and users
- Assignment of different rights for each user and user group for projects, views and widget.





3. Building Management Software RCO-view

3.4 Time schedules management

Features

- Weekly time schedules
 - Numbers of time schedules not limited
 - 20 on/off time pairs per day
 - Values can be assigned to the time pairs
 - Graphical time schedules
- Yearly time schedules
 - Numbers of time schedules not limited
 - Yearly time schedules can be connected to the weekly schedule

The screenshot displays the ELESTA RCO-view software interface. At the top, there is a navigation bar with links for 'Hauptmenü', 'Lüftung 1', 'Lüftung 2', 'Lüftung 3', 'Zeitsc.', and 'Widgets'. Below this is a title 'Zeitplan "Ventilator Stufe 1"' with a table showing time intervals for each day of the week. A Firefox browser window is open in the background showing a configuration page for a timer. In the foreground, there are three large calendar grids for May 2009. The top grid is labeled 'YTSC - Widgets - available at present' and shows the days of the month. The middle grid is labeled 'Wednesday, May 13rd 2009' and the bottom grid is labeled 'Tuesday, May 12nd 2009'. Both middle and bottom grids show a 5-day weekly view with days labeled Mo through Su and dates from 18 to 25. The days of the week are color-coded (Monday is grey, Tuesday is light blue, Wednesday is light green, Thursday is light orange, Friday is light purple, Saturday is light pink, and Sunday is light yellow).



3. Building Management Software RCO-view

3.5 Event logs

Features

- Event logs for:
 - Value changes
 - Client changes
 - Alarms
 - Commands
- Filter functions like time, user
- Download as csv
- Access control for event logs



Type	Time	Message	Meta
info	May, 18th 2009, 13:12:24	User logged in.	USER: admin IP: 127.0.0.1 Site: Dem02_Indian masterID: 02-06-006-0000006 master: RCU-720-D name: TSC_Step2
changes	May, 18th 2009, 12:27:18	Sent TSC cell change request for TSC_Step2	site: Dem02_Indian masterID: 02-06-006-0000006 master: RCU-720-D name: TSC_Step2
changes	May, 18th 2009, 12:25:30	Sent change value request for Room_ExhSetpDay_1	site: Dem02_Indian masterID: 02-08-006-00001288 master: RCU-720-D name: Room_ExhSetpDay_1
info	May, 18th 2009, 12:22:24	User modified view properties "Site 1".	IP: 127.0.0.1 USER: admin
info	May, 18th 2009, 12:09:26	User logged in.	IP: 127.0.0.1 USER: admin
info	May, 18th 2009, 11:56:02	User logged out.	IP: 127.0.0.1 USER: admin
info	May, 18th 2009, 11:55:35	User logged in.	IP: 127.0.0.1 USER: admin
info	May, 18th 2009, 11:37:08	User logged in using cookie	IP: 127.0.0.1 USER: admin
info	May, 18th 2009, 10:26:35	User logged in.	IP: 127.0.0.1 USER: admin
info	May, 18th 2009, 10:12:05	User logged in.	IP: 127.0.0.1 USER: admin
	May, 18th 2009,		IP: 127.0.0.1 USER: admin

© 2008 ELESTA Building Automation RCO-view



3. Building Management Software RCO-view

3.6 Integration of IP cameras

Features

- Integration of IP cameras
- Event driven fade in of live streams





3. Building Management Software RCO-view

3.7 Historical data, online trends

Features

- Archiving of historical data

- Freely definable archiving on BMS level storage in SQL data base
- Freely definable archiving on Controller level. Automatic transfer of the csv-files into the SQL data base
- Freely definable live-logs

- Visualization, analysis

- Graphical visualization of up to five data points within a web browser as line or bar graph
- Export of the data as csv-file
- Export of the picture as jpg
- Free selection of data points and color assignment via selection window
- Adjustable time slot for display
- Tracking function (display of value)



3. Building Management Software RCO-view

3.8 Intuitive engineering

Features

- Time-saving engineering through
 - Online or offline data point assignment
 - Drag and drop for positioning of animations
 - Widget library for 2D and 3D animations
 - Export function for pages, projects
- Pages freely configurable



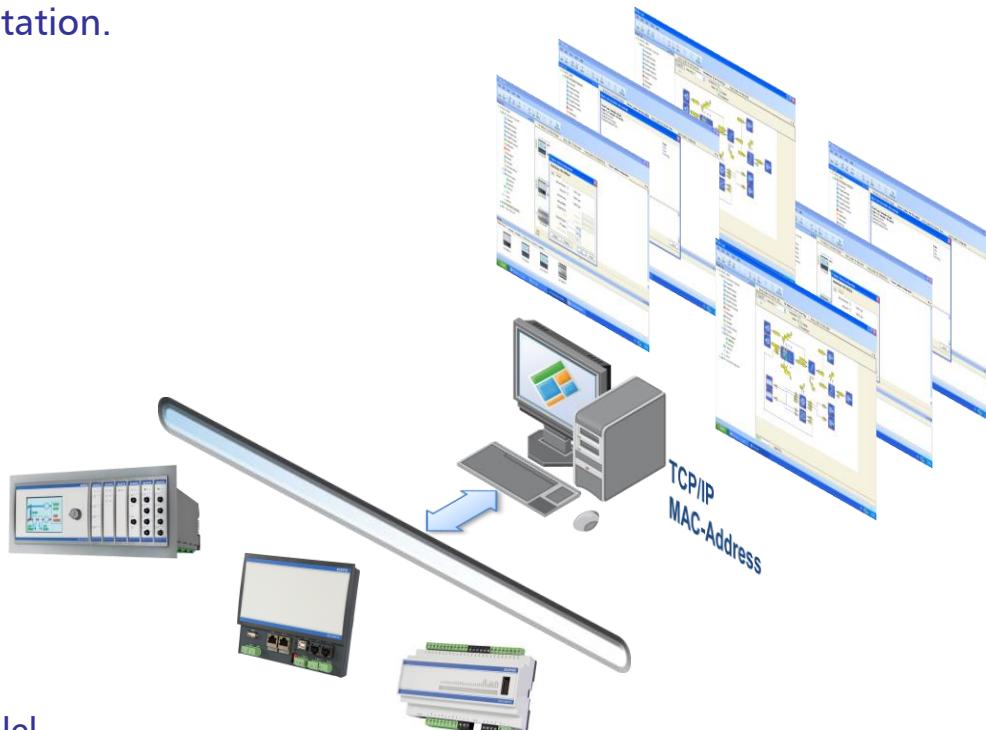
4. Efficient Engineering RCO-tool

The Controlesta RCO-tool serves the efficient and economic programming of Controlesta RCO-D installations. It supports the engineering process starting from the configuration via the programming until the commissioning and documentation.



4.1 Configuration

- Hardware configuration
- Alarms
- e-mail
- Time schedules
- Histories
- Interactive menus
- Embedded Web server
- BACnet



4.2 Programming

- Graphical and text programming can be done in parallel
- Program and macro module library
- Generation of individual program and macro modules
- Online programming
- Simple protocol implementation/hardware configuration



4. Efficient Engineering RCO-tool



4.3 Commissioning

- Online scanning of macro-modules
- Scanning of the I/O modules
- Alarm info
- Automatic generation of EDE-files



4.4 Documentation

- Storage of the project file
- Export in ASCII-Format
- Preparation for Excel or Word /
Export to printer
 - Plant configuration
 - Project tree
 - Menu
 - etc.

