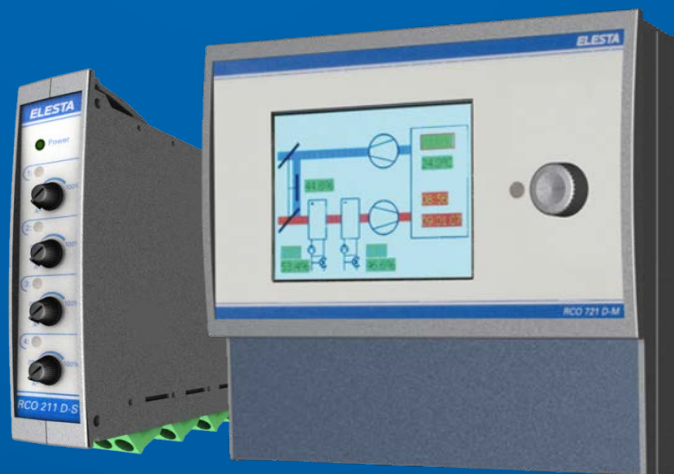


Efficient. Innovative. Sustainable.

Controlesta RCO

System Description



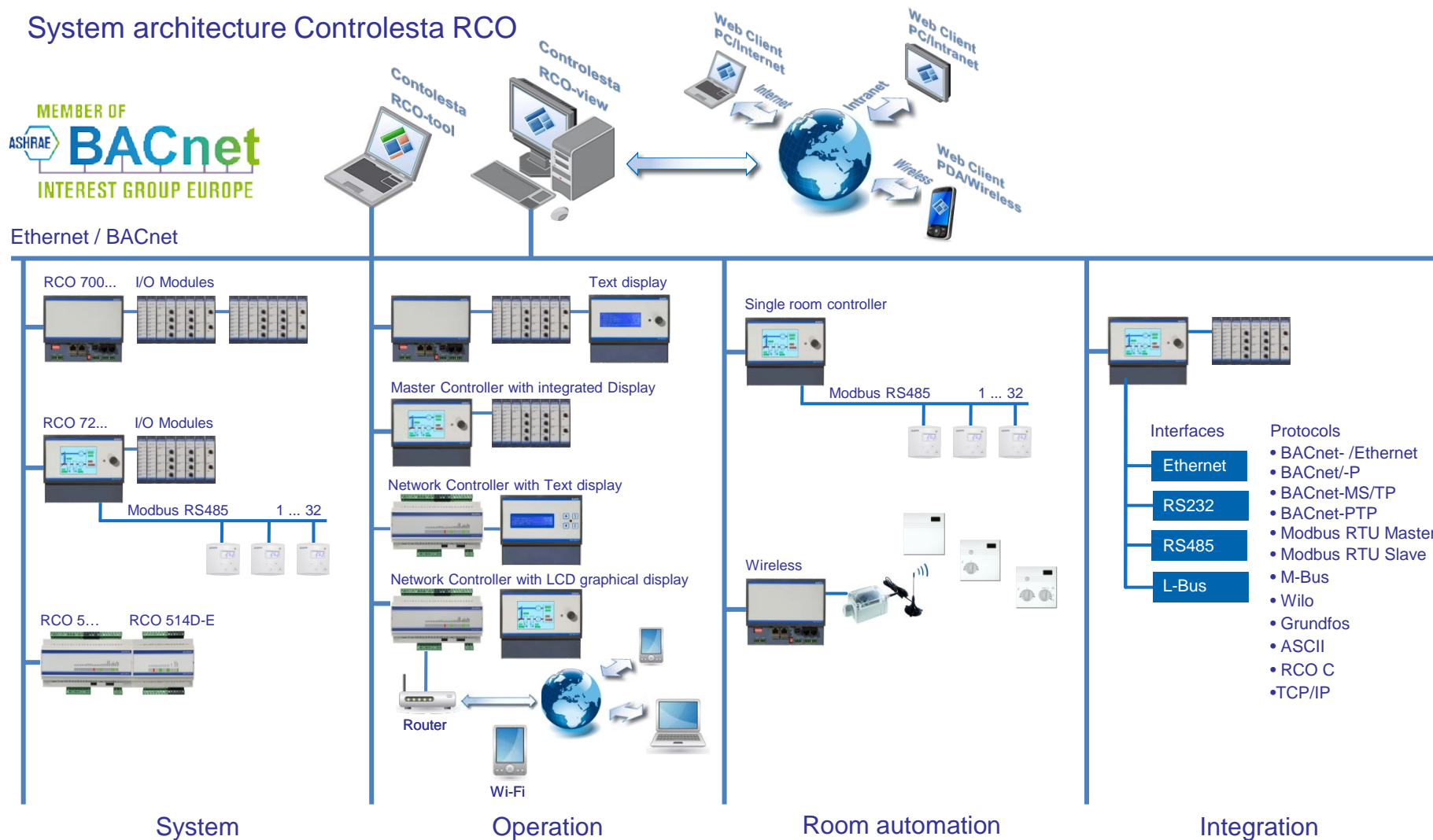
On-line, at each time, at
each place



CONTROLESTA RCO System Description

- 1. System architecture**
- 2. RCO System components**
 - 2.1 Master Controller
 - 2.2 Network Controller
 - 2.3 Compact-Controller
 - 2.4 Expander I/O Module
 - 2.5 I/O-Modules
 - 2.6 Power modules
 - 2.7 Mounting variants
 - 2.8 Operator panel RCO 640D-S
 - 2.9 Operator panel RCO621D-S
 - 2.10 Operator panel RCO 630D-S
 - 2.11 Integrated graphical Display RCO 72.D-...
 - 2.12 Embedded Web server
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 - 2.14 Single Room Controller
- 3. Building Management Software RCO-view**
 - 3.1 Animated visualisations for graphical operations
 - 3.2 Alarm Management
 - 3.3 Access management for user and user groups
 - 3.4 Time Schedule management
 - 3.5 Event monitoring with Log-Files
 - 3.6 Integration of IP cameras
 - 3.7 Historical data, Online Trending
 - 3.8 Intuitive engineering
- 4. Efficient Engineering RCO-tool**
 - 4.1 Configuration
 - 4.2 Programming
 - 4.3 Commissioning
 - 4.4 Documentation



1. System architecture Controlesta RCO



2. RCO System components

2.1 Master Controller





	 RCO 700D-M	 RCO 700D-W
Coloured graphical Display 320x240	-	-
Program and data memory	SD-Card 2GB	SD-Card 2GB
Ports	2x RS232	2x RS232
	2x RS485	2x RS485
	2x Ethernet	2x Ethernet
L-Bus-1 (Connection)	RCO C-Modules	RCO C-Modules
L-Bus-2 (Connection)	RCO D-Modules	RCO D-Modules
Protocols	RCO-C bus	RCO-C bus
	BACnet-Ethernet, -IP, -MS/TP, -PTP	BACnet-Ethernet, -IP, -MS/TP, -PTP
	MODBUS Master/Slave	MODBUS Master/Slave
	M-Bus	M-Bus
	Wilo / Grundfos	Wilo / Grundfos
	TCP/IP for RCO-view/-tool	TCP/IP for RCO-view/-tool
Trend-log Display/Browser	RCO 621D-S/-	X/X
E-mailing	X	X
Web server	-	X
Mounting	DIN-rail	DIN-rail

2. RCO System components

2.1 Master Controller





	 RCO 720D-M	 RCO 720D-W
Coloured graphical Display 320x240	X	X
Program and data memory	SD-Card 2GB	SD-Card 2GB
Ports	2x RS232	2x RS232
	2x RS485	2x RS485
	2x Ethernet	2x Ethernet
L-Bus-1 (Connection)	RCO C-Modules	RCO C-Modules
L-Bus-2 (Connection)	RCO D-Modules	RCO D-Modules
Protocols	RCO-C bus	RCO-C bus
	BACnet-Ethernet, -IP, -MS/TP, -PTP	BACnet-Ethernet, -IP, -MS/TP, -PTP
	MODBUS Master/Slave	MODBUS Master/Slave
	M-Bus	M-Bus
	Wilo / Grundfos	Wilo / Grundfos
	TCP/IP for RCO-view/-tool	TCP/IP for RCO-view/-tool
Trend-log Display/Browser	X/X	X/X
E-mailing	X	X
Web server	-	X
Mounting	Front	Front

2. RCO System components



2.1 Master Controller



	 RCO 721D-M	 RCO 721D-W
Coloured graphical Display 320x240	X	X
Program and data memory	SD-Card 2GB	SD-Card 2GB
Ports	2x RS232	2x RS232
	1x Ethernet	1x Ethernet
L-Bus-2 (Connection)	RCO D-Modules	RCO D-Modules
Protocols	BACnet-Ethernet, -IP, -PTP	BACnet-Ethernet, -IP, -PTP
	M-Bus	M-Bus
	TCP/IP for RCO-view/-tool	TCP/IP for RCO-view/-tool
Trend-log Display/Browser	X/-	X/X
E-mailing	X	X
Web server	-	X
Mounting	Front	Front


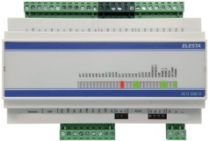
2. RCO System components
2.2 Network Controller



	 RCO 500D-M	 RCO 500D-W
Inputs	8 *UI (0 ... 10 VDC, 0 ... 20 mA, Ni1000, NTC10K, NTC30K, Pt1000, self defined function, digital) 6*DI (Potential free- or marked contacts (24 VAC/DC), Counting input 24 VAC/DC up to 20 Hz, pulse length >1ms)	8 *UI (0 ... 10 VDC, 0 ... 20 mA, Ni1000, NTC10K, NTC30K, Pt1000, self defined function, digital) 6*DI (Potential free- or marked contacts (24 VAC/DC), Counting input 24 VAC/DC up to 20 Hz, pulse length >1ms)
Outputs	4 *AO (0 ... 10 VDC, 0 ... 20 mA) 4 *DO (230V/4A)	4 *AO (0 ... 10 VDC, 0 ... 20 mA) 4 *DO (230V/4A)
Program and data memory	SD-Card 2GB	SD-Card 2GB
Ports	1x RS232 2xRS485 (1 for display) 1x Ethernet	1x RS232 2xRS485 (1 for display) 1x Ethernet
Protocols	BACnet-Ethernet, -IP, -MS/TP, -PTP RCO-C bus MODBUS Master/Slave/M-Bus Wilo / Grundfos (RS232/485) TCP/IP for RCO-view/-tool	BACnet-Ethernet, -IP, -MS/TP, -PTP RCO-C bus MODBUS Master/Slave/M-Bus Wilo / Grundfos (RS232/485) TCP/IP for RCO-view/-tool
Trend-log Display/Browser	RCO 621D-S/-	RCO 631D-S/X
E-mailing	X	X
Web server	-	X
Mounting	DIN-rail	DIN-rail

2. RCO System components

2.2 Network Controller

	 RCO 530D-M	 RCO 530D-W
Inputs	8 *UI (0 ... 10 VDC, 0 ... 20 mA, Ni1000, NTC10K, NTC30K, Pt1000, self defined function, digital) 6*DI (Potential free- or marked contacts (24 VAC/DC), Counting input 24 VAC/DC up to 20 Hz, pulse length >1ms)	8 *UI (0 ... 10 VDC, 0 ... 20 mA, Ni1000, NTC10K, NTC30K, Pt1000, self defined function, digital) 6*DI (Potential free- or marked contacts (24 VAC/DC), Counting input 24 VAC/DC up to 20 Hz, pulse length >1ms)
Outputs	4 *AO (0 ... 10 VDC, 0 ... 20 mA) 4 *DO (230V/4A)	4 *AO (0 ... 10 VDC, 0 ... 20 mA) 4 *DO (230V/4A)
Program and data memory	SD-Card 2GB	SD-Card 2GB
Ports	1x RS232 1xRS485 (1 for display) 1x Ethernet	1x RS232 1xRS485 (1 for display) 1x Ethernet
Protocols	RCO-C bus	RCO-C bus
Trend-log Display/Browser	RCO 621D-S/-	RCO 621D-S/X
E-mailing	X	X
Web server		X
Mounting	DIN-rail	DIN-rail

2. RCO System components

2.3 Compact-Controller



RCO 550D-M

Inputs	8 *UI (0 ... 10 VDC, 0 ... 20 mA, Ni1000, NTC10K, NTC30K, Pt1000, self defined function, digital) 6*DI (Potential free- or marked contacts (24 VAC/DC), Counting input 24 VAC/DC up to 20 Hz, pulse length >1ms)
Outputs	4 *AO (0 ... 10 VDC, 0 ... 20 mA) 4 *DO (230V/4A)
Program and data memory	SD-Card 2GB
Ports	1x RS232 1xRS485 (1 for display)
Mounting	DIN-rail

2. RCO System components
2.4 Expander I/O-Module











RCO 514D-E

Inputs	8*DI (Potential free- or marked contacts (24 VAC/DC), Counting input 24 VAC/DC up to 20 Hz, pulse length >1ms)
Outputs	6 *DO (230V/4A)
Ports	I/O bus
Mounting	DIN-rail



2. RCO System components

2.5 I/O-Modules

	Universal-In	Digital-In	Analogue-Out	Analogue-Out	Digital-Out	Digital-Out	Tri-state-Out	Tri-state-Out
								
	RCO 110D-S	RCO 120D-S	RCO 210D-S	RCO 211D-S	RCO 220D-S	RCO 221D-S	RCO 230D-S	RCO 231D-S
Inputs	8x UI	8x DI	-	-	-	-	-	-
Outputs	-	-	4x AO	4x AO	4x DO	4x DO	2x Tri-state	2x Tri-state
Application	I-Slave	I-Slave	O-Slave	O-Slave	O-Slave	O-Slave	O-Slave	O-Slave
Functions	0-10V, Ni1000, NTC10K, NTC30K, PT1000, self defined functions	Potentialfree- or marked contacts (24 VAC/DC), Counting input 24 VAC/DC up to 20 Hz, pulse length >1ms	0 ... 10 VDC	0 ... 10 VDC	230 V, 4 A	230 V, 4 A	230 V, 4 A	230 V, 4 A
Manual override	No	No	No	Auto, 0-100%	No	Auto, 0,1	No	Auto, close, 0, open
Feedback signal	-	-	-	Function, value	-	Function, value	-	Function, value
L-Bus-1	-	-	-	-	-	-	-	-
L-Bus-2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Power supply	24 VDC	24 VDC	24 VDC	24 VDC	24 VDC	24 VDC	24 VDC	24 VDC
Mounting	Front / DIN-rail	Front / DIN-rail	Front / DIN-rail	Front / DIN-rail	Front / DIN-rail	Front / DIN-rail	Front / DIN-rail	Front / DIN-rail

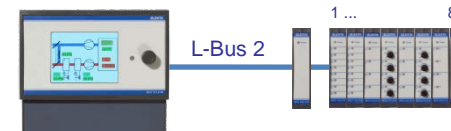
2. RCO System components

2.6 Power modules

	Power-Modul	Power-Bridge-Modul
		
	RCO 300D-P	RCO 302D-P
Inputs	-	-
Outputs	-	-
Application	Supply	Supply
Functions	Power supply of the I/O-Modules	+ galvanical isolation L-Bus A to L-Bus B
Manual override	No	No
Feedback signal	-	-
L-Bus 1	-	-
L-Bus 2	Yes	Yes
Power supply	24 VDC	24 VDC
Mounting	Front / DIN-rail	Front / DIN-rail

Up to max 8 I/O-Modules

RCO 721D-M

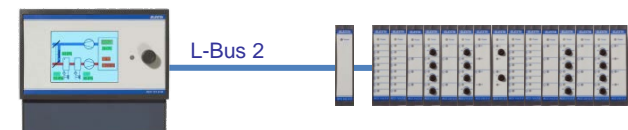


In case the load becomes higher than 12W a power modules must be used.

More than 8 I/O-Modules

RCO 700/720D-M

RCO 300D-P

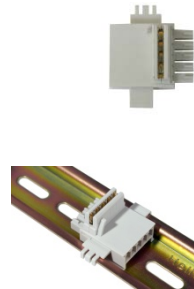


2. RCO System components
2.7 Mounting variants

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 used Plug in Philosophy
- Exchange of the modules during operation



2. RCO System components

2.8 Operator panel RCO 640 D-S for RCO 7...

Text menu

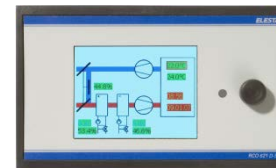
- Menu structure is freely configurable
- Indication of data points, and time schedules
- Alarm indication / acknowledgement
- Access to all Master Controller within the network
- Password protected



2.9 Operator panel RCO 621D-S for RCO 500..., 530..., 7...

Text and graphical menu

- Like 2.8
- Additional: Free configurable coloured graphical display with animation of objects
- Indication of graphical trend-logs



2.10 Operator panel RCO 630D-S for RCO 5...

Text menu

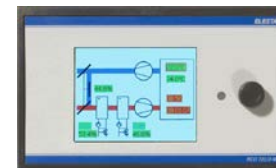
- Menu structure is freely configurable
- Indication of data points and time schedules
- Alarm indication / acknowledgement
- Access to all Master Controller within the network
- Password protected



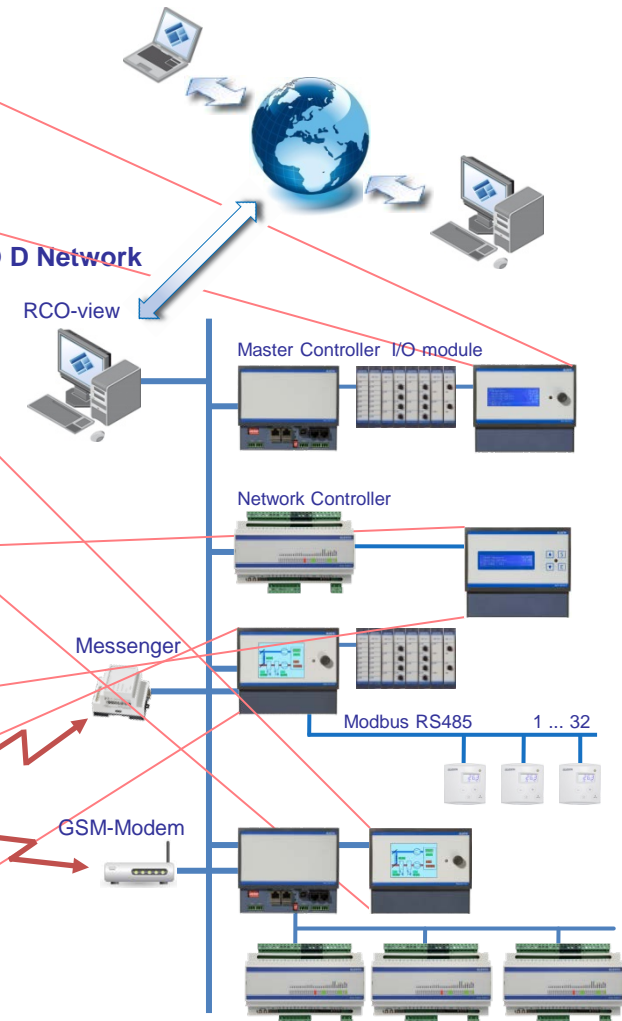
2.11 Integrated graphical display RCO 72.D-...

Text and graphical menu

- Like 2.8
- Additional: Free configurable coloured graphical display with animation of objects
- Indication of graphical trend-logs



RCO D Network



2. RCO System components

2.12 Embedded Web server



The Web-Server provides the visualisation 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 per remote control 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.

2.13 Trend-log Functionality

Controller with an embedded Web-Server supports the indication of online- and historical data as graphical Trend-logs via a standard Web-Browser. Master controller with integrated display and the graphical display RCO621D-S also support the trend-log indication.



2. RCO System components

2.14 Single Room Controller

Parametrisable Single Room Controller

Operating mode:

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



RCO ER440A02

- 4-pipe-System



RCO 030A00

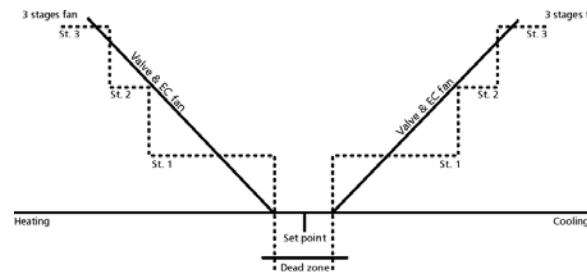
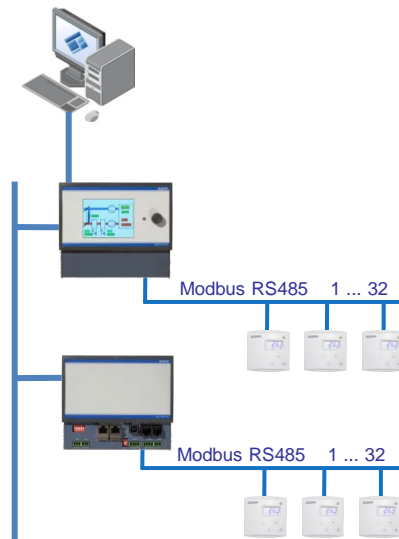
Coupling relay for 3-stages fan



RCO ER450A02

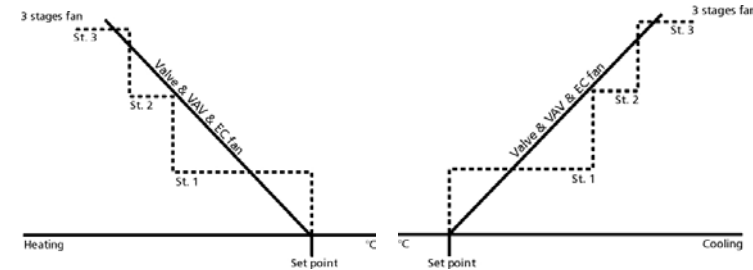
- 2-pipe-System

Integration in the RCO-Network



Connections / Out-/Inputs:

- 24 VAC
- Modbus
- Heating (0 ... 10 VDC or ON/OFF)
- Cooling (0 ... 10 VDC or ON/OFF)
- Fan (0 ... 10 VDC)
(Stages with Modules RCO 030A00)
- Window contact
- Presence button

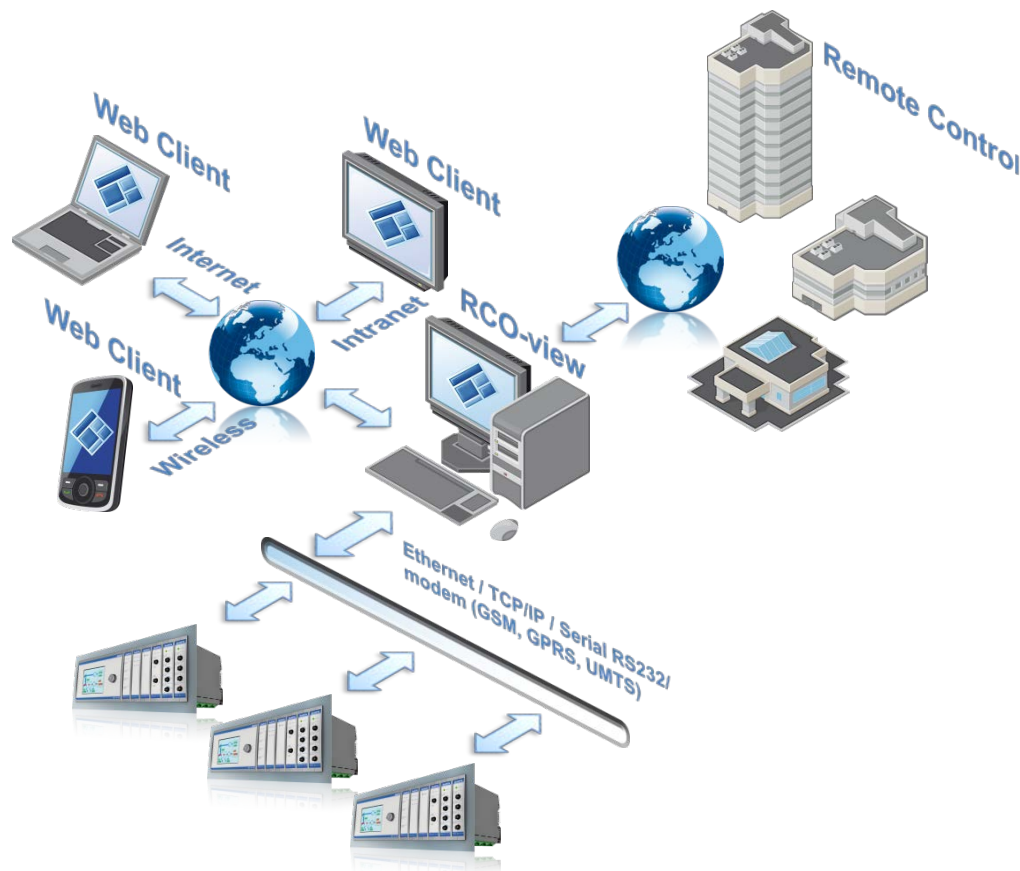


Connections / Out-/Inputs:

- 24 VAC
- Modbus
- Heating (0 ... 10 VDC / ON/OFF or tri-state)
- Cooling (0 ... 10 VDC / ON/OFF or tri-state)
- Fan (0 ... 10 VDC)
(Stages with Modules RCO 030A00)
- Window contact
- Presence button



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)
- MS.Net Framework Technology

Features

- Animated visualisations for graphical operations
- Alarm and messenger management
- Access management for user and user groups
- Time Schedule management
- Event logs
- Archiving and analysis of historical data
- Online Trending
- Multi-Site-Handling

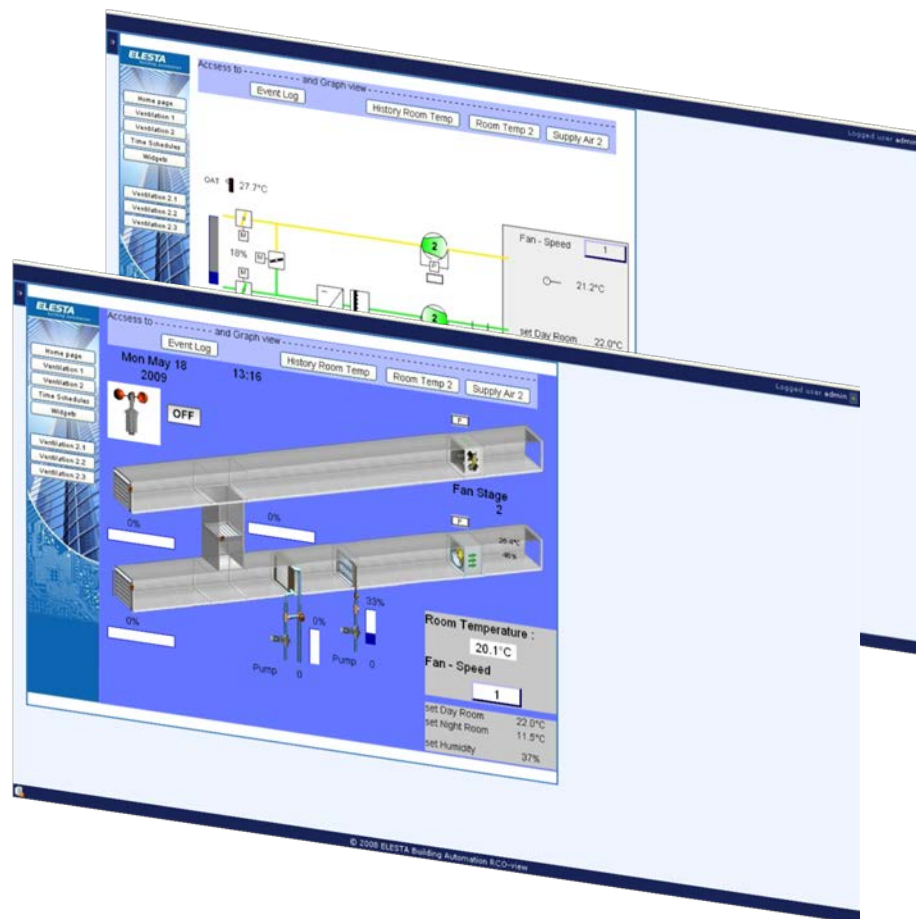


3. Building Management Software RCO-view

3.1 Animated visualisations for graphical operations

Features

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



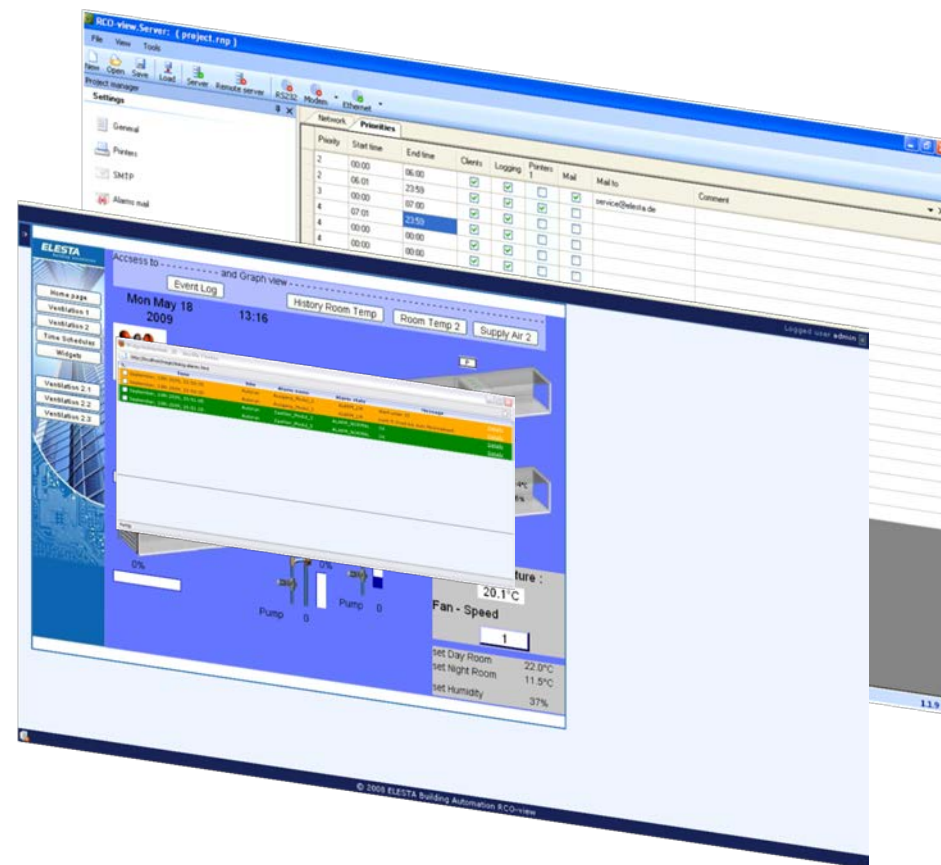


3. Building Management Software RCO-view

3.2 Alarm Management

Features

- Priority and event controlled alarm and messenger management
- Time and priority dependent dispatch of / to
 - emails
 - sms (via Provider)
 - printer
 - client (Alarm Window)
- Alarm Log-Files





3. Building Management Software RCO-view

3.3 Access management for user and user groups

Features

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





3. Building Management Software RCO-view
3.4 Time Schedule 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
- Yearly time schedules
 - Numbers of time schedules not limited
 - Yearly time schedule can be connected to the weekly schedule

Zeitplan "Ventilator Stufe 1"

off	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1	6:00 - 1:00	6:00 - 12:00	6:00 - 12:00	6:00 - 12:00	6:00 - 12:00		
2							

YTSC - Widgets - available at present

Wednesday, May 13rd 2009

CW	Mo	Tu	We	Th	Fr	Sa	Su
18							
19							
20	4	5	6	7	8	9	10
21	11	12	13	14	15	16	17
22	18	19	20	21	22	23	24
	25	26	27	28	29	30	31

Tuesday, May 12nd 2009

CW	Mo	Tu	We	Th	Fr	Sa	Su
18							
19							
20	4	5	6	7	8	9	10
21	11	12	13	14	15	16	17
22	18	19	20	21	22	23	24
	25	26	27	28	29	30	31

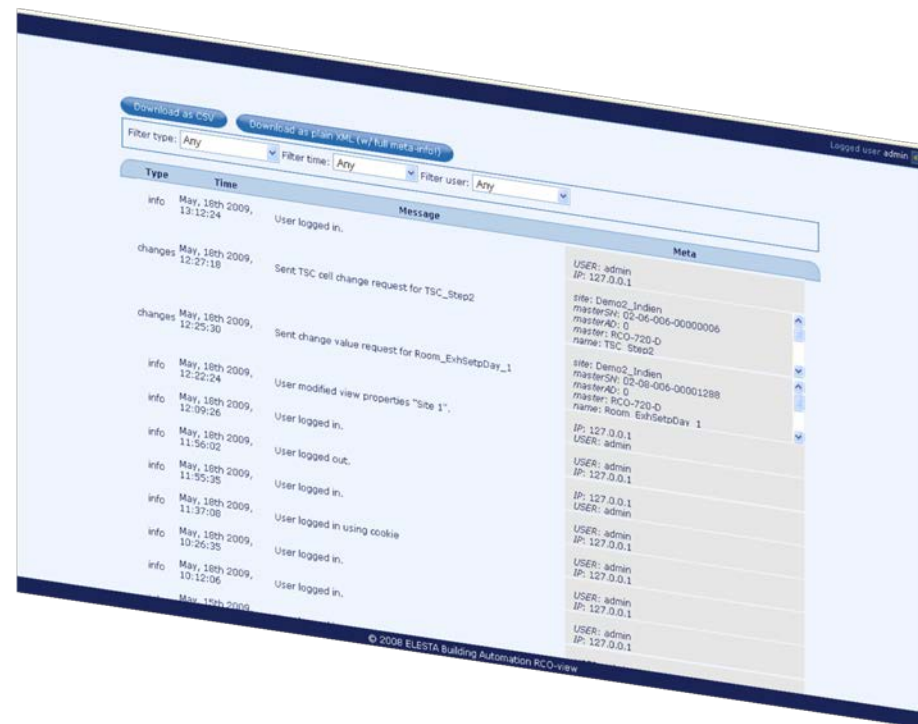


3. Building Management Software RCO-view

3.5 Event monitoring with Log-Files

Features

- Event logs for:
 - Value changes
 - Client changes
 - Alarms
 - Commands
- Filter function like time, user
- Download for CSV or XML
- Access control for event logs





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 Trending

Features

• Archiving of historical Data

- 48 hour trend for all server data points
Storage in SQL data base
- Free definable archiving on BMS level
Storage in SQL data base
- Free definable archiving on Controller level.
Automatic transfer of the csv-files into the
SQL data base
- Frei definable Live-Logs

• Visualisation, analysis

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



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 the positioning of the animations
 - Widget library for 2D and 3D animations
 - Export function for pages, projects
- Pages free 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.



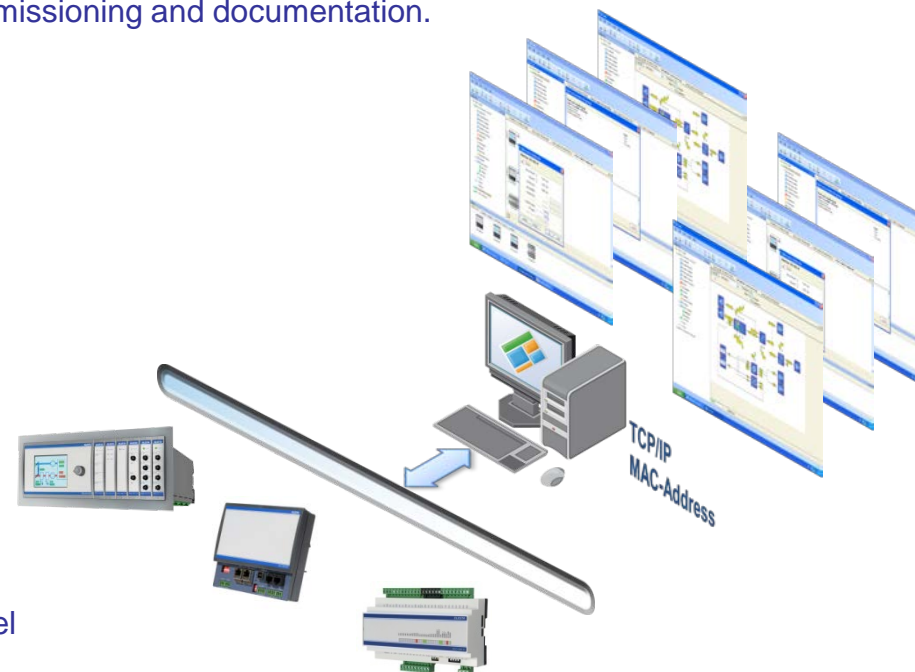
4.1 Configuration

- Hardware configuration
- Alarms
- 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. RCO-tool (Engineering)

4.2 Commissioning

- Online Scanning of macro-modules
- Scanning of the I/O-Modules
- Alarm Info
- Automatic generation of EDE-files

4.3 Documentation

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

