Data sheet

RCO 900D-M

RCO 900D-W

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Application

Controlesta RCO 900D-.. are free programmable Master-Controllers. The devices are suitable for the operation within a network. The Master-Controllers Controlesta RCO 900D-.. can be used for the automatic control, monitoring, optimization and energy management within the building automation. The Master-Controllers can be connected via Ethernet (peer-to-peer communication) to the RCO D network. The implemented interfaces and protocols offer a variety of communication and integration abilities. As BACnet Building Controller the Master-Controller supports on demand the BACnet protocol according to the BACnet standard ISO16484-5:2010, Revision 12. Supported data link layers: BACnet-Ethernet, BACnet-IP, BACnet-MSTP and BACnet-PTP. Router functionality according to Clause 6. BBMD (BACnet-IP Broadcast Management Device) function can be activated if required. The controller **RCO 900D-W** provides additionally an integrated web server for the visualization and operation of the plant data and alarms via Intranet or Internet with a standard web browser. The graphical visualization of trend-logs via a web browser is integrated. The HTML5 pages are designed comfortably and efficiently with the RCO-tool.

Features

- 32 Bit-Microprocessor (ARM9 / 450 MHz) with real time operation system
- 64 MByte DDR2 RAM
- 32 MBit Flash Memory
- 1 slot for SD-Memory Card as internal and external data and program memory.
- 2 x RS232 Interface: Used for the connection to BMS RCO-view, PC, analog/gsm-messenger, modem and printer as well as for the connection of the already implemented protocols.
- 2 x RS485 Interface: For the connection of the already implemented protocols as well as for the communication to the Controlesta RCO C Master network.
- 2 x Ethernet interface (in/out with integrated hub functionality) for the peer-to-peer communication to RCO D network components.
- 1 x L-Bus 1-connection with selectable speed (default: 100 Kbps) for the connection of up to 32 Slave-Modules RCO C
- 1 x L-Bus 2-connection with selectable speed (default: 100 Kbps) for the connection of up to 32 I/O-Modules RCO D
- The already implemented protocols like ASCII, Modbus RTU Master/Slave, M-Bus, Wilo, Grundfos, RCO C and BACnet can be combined with the integrated interface (Ethernet, RS232, RS485).
- The operator panel RCO 621D-S can be connected via Ethernet
- Standardized algorithms for PID regulation
- E-mailing (alarms, historical data, point lists) direct from the controller
- Integrated alarm and modem handling
- The programming of all functions of the plant software is done by the engineering software Controlesta RCO-tool
- Battery back up for the real time clock
- Approved to European EMC standards CENELEC EN 50 082-1 and EN 55 011
- CE-Approval

Environmental Conditions	Ambient temperature	0 ... 50 °C
	Storage temperature	-20 ... 60 °C
	Ambient humidity	0 ... 90 % rh., non condensing
	Protection Class	III
Execution	Housing	Plastic, for DIN-rail mounting
	Production	According to ROHS
	Dimensions	w x h x d, 160 x 136 x 35 mm
	Weight	280 g
Electrical Data	Power supply	24 VAC/DC +/- 10 %, Class II
	Output voltage	L-Bus1: 24 VDC @ max. 1,0 A. C-Slaves connected to L-Bus1 should be powered by an external power supply (e.g. RCO 302D-P). The maximum power consumed must not exceed 12 W. L-Bus2: 24 VDC @ max. 1,0 A. D-Slaves connected to L-Bus2 should be powered by an external power supply (e.g. RCO 302D-P). The maximum power consumed must not exceed 12 W.
	Power consumption	5 W without Slaves
	Wire capacity	14 ... 24 AWG (0,25 ... 2,5 mm^2)
	Main tightening torque	4 In-lb (0,45 Nm)
	Protection acc. to EN60529	IP 20

Communication Interfaces

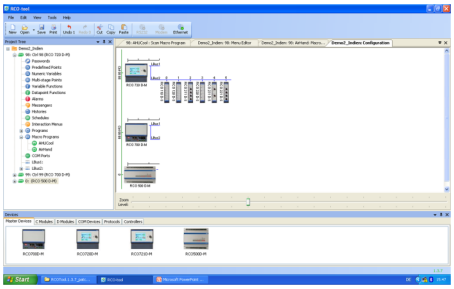
Interface	Protocols / Functions	Connection	Transmission speed:
Com 1 (RS232) Com 2 (RS232)	ASCII Protocol Modbus RTU Master/Slave M-Bus BACnet Point to Point, EIA232 (Com 2 only) BACnet Point to Point, Modem (Com 2 only) Connection to - BMS RCO-view - PC (programming), - Modem (analog, gsm) - Printer - Messenger (SMS to mobile network operator, Fax, e-mail)	RJ45 Max. length: 15m	57.600 bps (default) adjustable from 1.200 up to 115.200 bps BACnet: 9.600 / 57.600 / 115.200 bps
RS485_1 RS485_2	Modbus RTU Master/Slave M-Bus Wilo Grundfos RCO C (Central bus for the cross-linking of up to 32 Master Controller) BACnet-MSTP Master BACnet-MSTP Slave	2- or 3-wire connection (twisted pair, shielded) up to max. 1200 m	Up to 115.200 bps. BACnet: 9.600 / 19.200 / 38.400 / 76.800 / 115.200 bps
L-Bus 1	L-Bus-protocol for the field bus communication with up to 32 RCO C slave-modules.	4-wire bus (twisted pair, shielded) incl. power supply, length 40 - 600 m, depended on cable type and speed of the bus, can be extended by use of a Power Bridge Module RCO 302D-P	Standard: 100 Kbps adjustable to 20 - 100 Kbps Slave device address adjustable via DIP-switches
L-Bus 2	L-Bus-protocol for the field bus communication with up to 32 RCO D I/O-modules.	4-wire bus (twisted pair, shielded) incl. power supply, length 40 - 600 m, depended of cable type and speed of the bus, can be extended by use of a Power Bridge Module RCO 302D-P	Standard: 100 Kbps adjustable to 20 / 100 / 500 / 1000 Kbps
Ethernet In/out	Ethernet protocol for connection to the RCO D network - BACnet-IP - BACnet-IP, Foreign Device - BACnet-Ethernet, ISO 8802-3 - RCO-view, RCO-tool (MAC-Address, TCP/IP) Operator panel RCO 621D-S can be connected	RJ45	10/100 Base-T

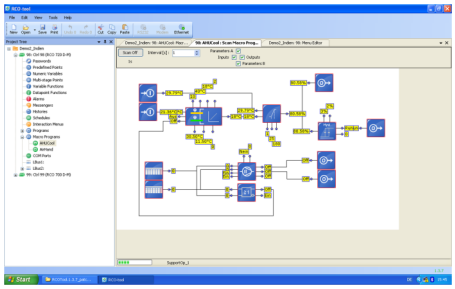
Functional data

Memory	64 MByte DDR2 RAM 32 MBit Flash memory for the operating system 1 slot for SD-Memory Card (max. 8 GB) as data and program memory
Power failure safety	Data and programs are secured on the SD-Memory Card
Real time clock	In case of a power cut battery backup is provided Battery: CR2032, 210mAh Shelf life: 5 years at room temperature

Programming

Control sequences can be quickly created by “dragging & dropping” of program and macro modules and/or by line-by-line text programming. Both kinds of programming can be used in parallel. Beside a comprehensive program and macro library own modules can be created easily. The on-line scanning of macro programs as well as the scanning of the input and output modules for the commissioning are supported. The RCO-tool supports beside all standard configurations (data points, time schedules, alarms, histories, etc.) the complete engineering of BACnet including the automated generation of the EDE-files and the integrated web server. The controllers can be reached via their MAC- or IP address. The complete programming is backward readable.





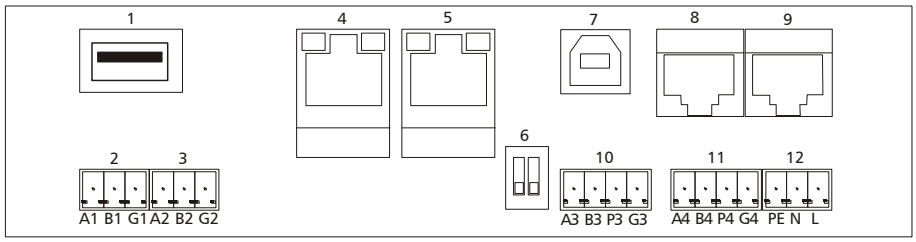
Software

The firmware of the Controlesta RCO D series provides beside general functions also specific HVAC functions. Weekly time schedules with up to 20 time pairs and unlimited numbers of schedules, yearly time schedules with unlimited numbers of entries. Any numbers of alarms with a priority between 1-255. Each alarm offers two upper and two lower limits. Each history can contain 18 data points. The number of histories is not limited.

Operation

BMS: Controlesta RCO-view is a web based building management software. The client server architecture provides the simultaneous password protected user access of different users (Multi-user) to an installation. Multi-site-handling for the operation, alarming, monitoring and programming of remote installations via all modern communication media is supported.
Operator terminal: RCO 621D-S and RCO 680D-S (only embedded web server) for local operation are available.

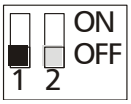
Point schematic



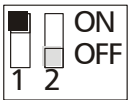
1. USB 1 no function
2. RS485_1
3. RS485_2
4. Ethernet
5. Ethernet
6. DIP-switch for the termination resistor L-Bus1+2 (T)
7. USB 2 no function
8. COM1 (RS232)
9. COM2 (RS232)
10. L-Bus 1
11. L-Bus 2
12. Power

DIP-switch settings

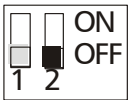
The termination resistor for L-Bus 1 (DIP 1) must be activated for the first and the last device
The termination resistor for L-Bus 2 (DIP 2) must be activated for the first and the last device



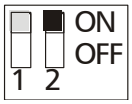
L-Bus 1 not active



L-Bus 1 active

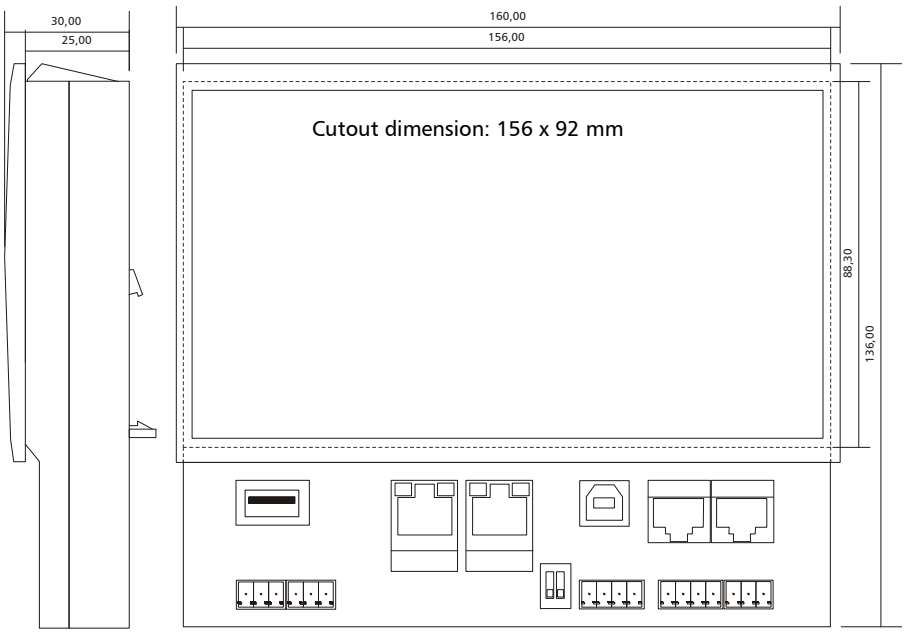


L-Bus 2 not active



L-Bus 2 active

Dimension drawing



Delivery scope

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