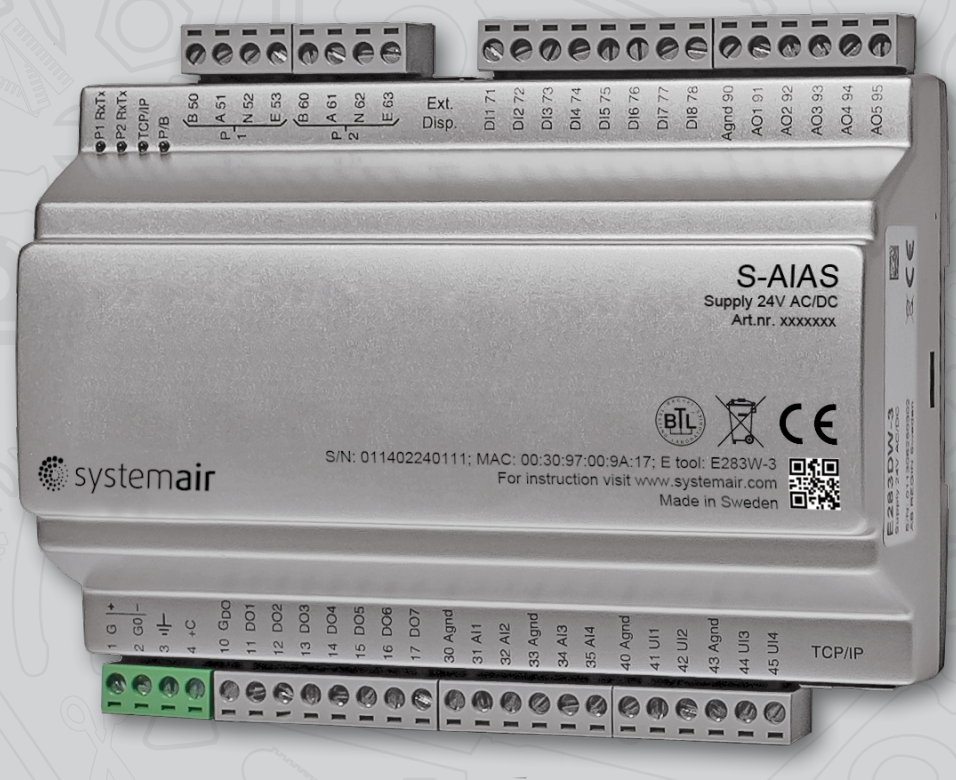
Air Distribution Products

AIAS

Optimizing Control System

User Manual



systemair

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General System Description

AIAS is a pre-programmed, easy configurable and operable control system for optimising the energy consumption in demand oriented building ventilation systems with VAV controllers.

The minimal configuration of AIAS system is based on one central control unit called AIAS-Combox. It is a compact DDC-controller with pre-programmed functional blocks for optimizing ventilation system energy consumption.
It communicates via bus on Exoline and Modbus protocols and so it can be integrated into superior BMS. Such configuration is able to operate in systems with up to 30 rooms or spaces individually controlled by VAV and aerated by one air handling unit with variable fan speed control. Each space can be operated by a supply and an extract VAV with app. 10 data-points (measurement and control variables) processed by AIAS.

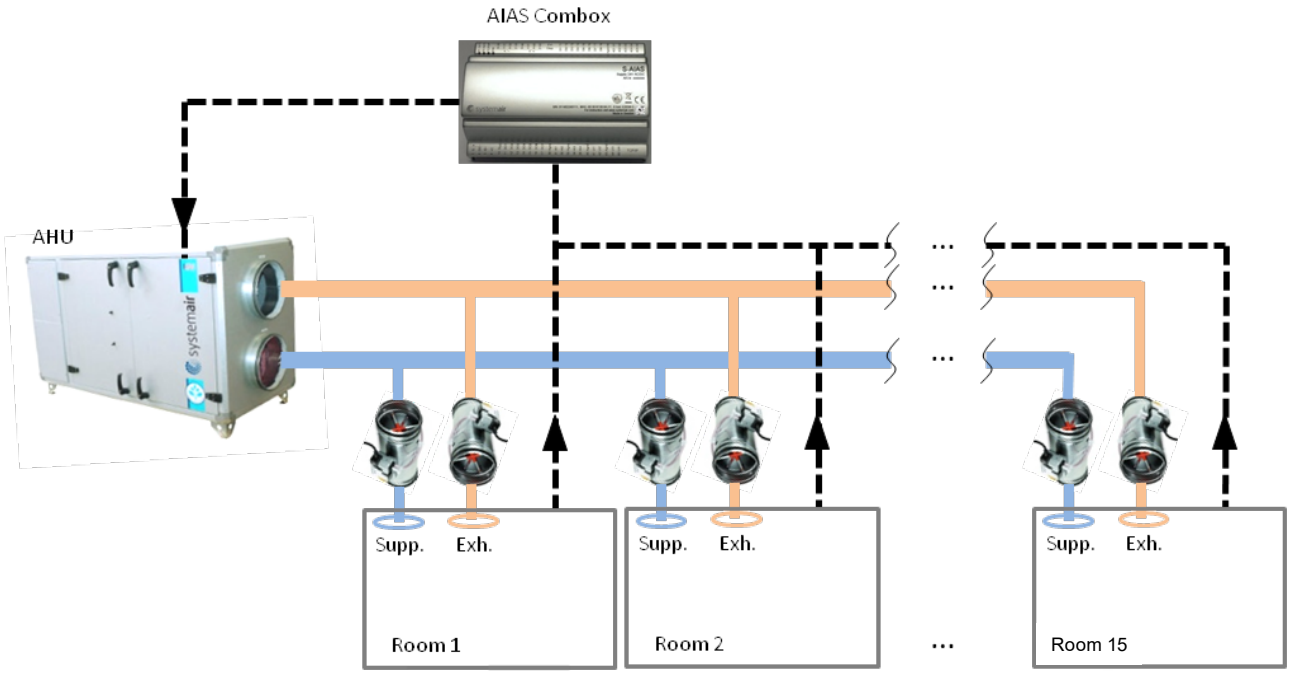


Fig. 1: Minimal configuration: 1 AIAS Combox

The configuration can be extended by adding next AIAS Combox units each for additional up to 30 rooms aerated by the same AHU. So the configuration can be scaled up to virtually unlimited number. The real limitation is the number of rooms aerated by the same AHU.
The master AIAS Combox tops the chain of control signals from all slave units. It generates the power control signals for the Supply and extract fan.

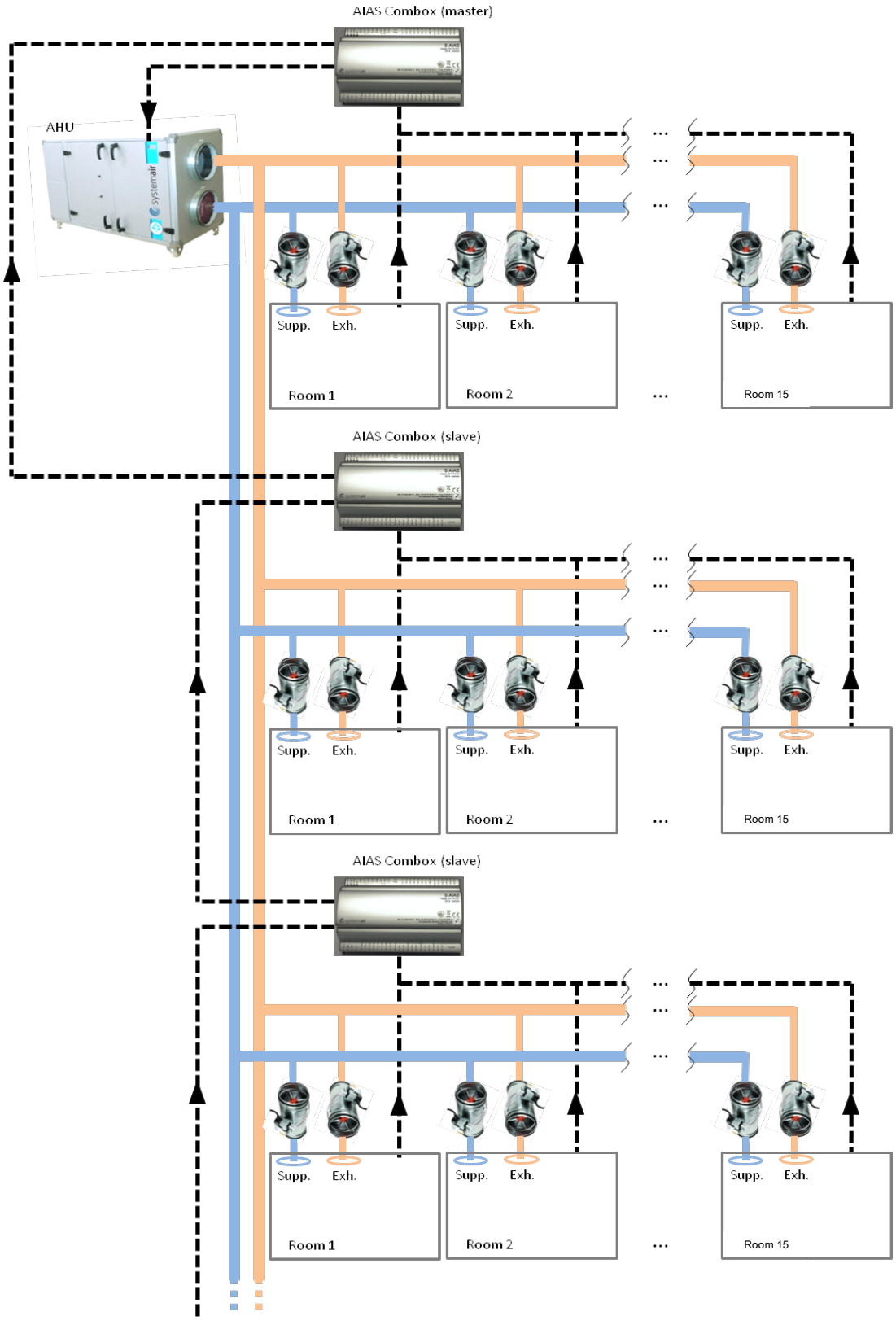


Fig. 2: Extended configuration: 1 AIAS Combox (master), virtually unlimited number of additional AIAS Combox (slave).

Detailed Topology

The operation of AIAS optimizing system is based on the reading of the position of the VAV controller dampers. The damper position information can be transmitted in two different ways:

1. Analog signal (DC 0-10 V or 0-10 kOhm)
   These signals are collected in AIAS RIO (remote input/output) module and transferred to AIAS Combox via Exoline communication bus. There can be two RIO modules each with 16 analog inputs used for one Combox. That means, up to 32 VAV damper position signals.
   This method is recommended, if the VAV controllers in the system are not able to communicate via bus. Especially in case of refurbishment, where older VAV´s have only 10V position signal or even none, their replacement is not required. The VAV´s without position signal can be equipped with auxiliary angle position sensors with 10kOhm potentiometer and integrated so in AIAS optimizing system.
2. Modbus RTU communication
   Systemair VAV controllers with Modbus RTU communication ability (controller type BLC-MOD) can share the position information via Modbus directrly to AIAS. Also other VAV operational variables can be communicated via Modbus.

Both of these modes allow to integrate also VAV controllers operating in master/slave combination of air supply and extract (balancing the room pressure) where each of them belongs to the optimizing loop of corresponding fan (supply VAV to supply fan and extract VAV to extract fan).

Also these modes sllow to integrate the zone balancing VAV´s on both, supply and extract side of the ventilation system.

Even though no additional digital controllers except AIAS Combox are necessary for optimizing functionality, the AIAS system can handle useful functionalities performed by room controllers AIAS RC. Besides the individual room control functions like room temperature control, combinable with control of other values (CO2, humidity etc.) and besides the local overrides (occupancy sensor, window contact etc.) the AIAS can add the centralized remote functionalities like heating/cooling change-over, free cooling, common overrides. These are effective centrally for all connected room controllers.

The fan power control by AIAS Combox (master) is based on sending DC 0-10V setpoint signals to the fan power control units (frequency converters or other controlled power limiters) – separately one to the air supply and one to the air extract unit.

The connection for fan power control signals between AIAS Combox and the air handling units (Topvex or DV by Systemair, using the „frequency control external" configuration in DDC with corresponding analog inputs configuration „external control SAF", „external control EAF") or fans can be seen in wiring diagram of AIAS Combox (page 10). In some AHU´s it is possible to use pre-configured analog inputs of the AHU control unit for auxiliary control of the fan speed by AIAS. The AHU´s and fans without this option can be connected directly. That means, that the fan power control signal from standard AHU or fan controller will be disconnected from the fan frequency converter or other controlled power limiter. At the same place (input terminals) the control signal from AIAS will be connected.
If the AIAS Combox is in a chain of more Combox controllers, it reads the fan power setpoint signals from the controller 1 level lower in the chain. It compares these signals with own calculated setpoints and sends out the higher demand signals to the controller higher in the chain. The higher controller does exactly the same and so the highest demand singnal propagates to the fan control. So the AIAS comboxes in the chain do not need to communicate the fan power demand on any bus – the connection of analog inputs and outputs is easy and without any additional configuration.

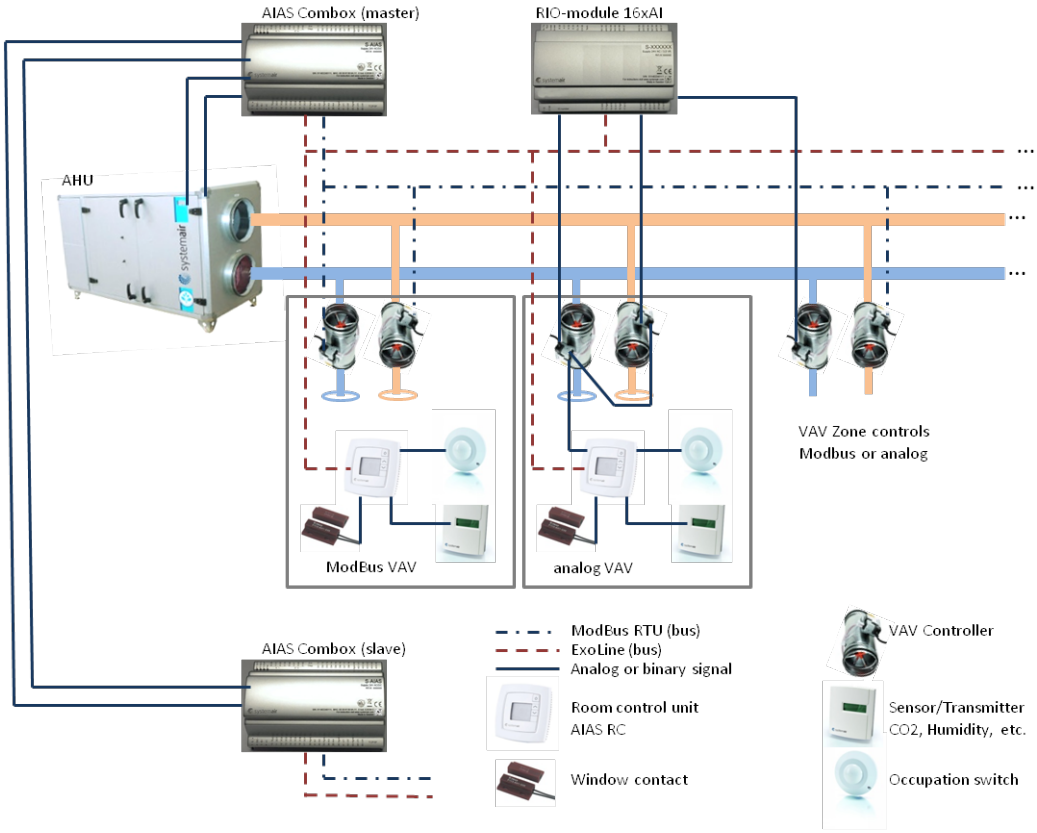


Fig. 3: Aias system topology with typical IRC and other control configurations

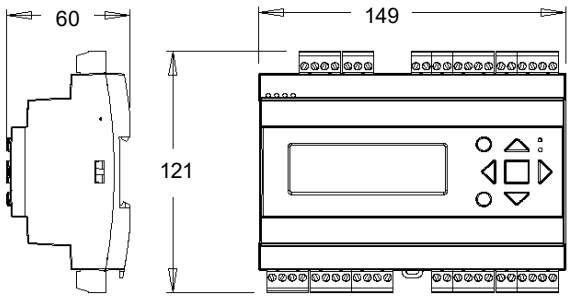
Hardware

AIAS „Combox“

Description

The central piece of the AIAS optimizing system for the demand oriented air handling, flow control and distribution is the AIAS “combox”. It coordinates the operation of air handling untit with all the individual room control elements by a tailored digital control solution without need of additional coding. It covers also the communication functions for direct or remote parametrizing, messaging, management, commissioning, maintenance and BMS integration. The customized set-up, recognition and assignment of the system elements at initial start-up is easy and intuitive using a setup menu.

The capacity of a single AIAS “combox” is sufficient to operate with up to 30 individual room VAV-control loops, where each can contain app. 10 data points (control and measurement variables). The positions of the VAV-controllers are examined separately air supply and for air extract. This enables AIAS “combox” to generate optimized control values individually for the supply and the exhaust fan on the AHU.



Technical Data and Dimensions

Supply voltage	24V AC ±15%, 50...60Hz or 20...36V DC
Power requirement	3 VA (without load)
+C output	+ 24 V DC, 0.1 A, short-circuit proof
Communication	EXOline, Modbus or dial-up connection Port 1, isolated, via a built-in RS485 connector.
TCP/IP port	available
Operating system	EXOreal
Battery backup	Memory and real-time clock, at least 5 years
Ambient temperature	0...50°C
Dimensions	148 x 123 x 58 mm (W x H x D). DIN controller width: 8 1/2.
Protection class	IP20
Mounting	DIN-rail mounting or cabinet mounting
	EMC emissions & immunity standards: This product conforms to the requirements of the EMC
	Directive 2004/108/EC through product standards EN 61000-6-1 and EN 61000-6-3.
RoHS:	This product conforms to the Directive 2011/65/EU of the European Parliament and of the Council.

INPUTS	
Analogue inputs, AI	0...10 V, 0...200 mV, Pt1000, DIN Ni1000, LGNi1000, 12 bit A/D
Digital inputs, DI	Floating contact, 24 V DC, configurable for pulse input
Universal inputs,	UI AI or DI (see above)
OUTPUTS	
Analogue outputs, AO	0...10 V, 5 mA, 8 bit D/A, short-circuit proof
Digital outputs, DO	Mosfet 24 V AC/DC, 2 A. Totally max 8 A.
24 V DC output	0.1 A, short-circuit proof

Connection 10Base-T/100Base-TX auto-negotiation (RJ45).
Cable length max 100 m (min Cat 5)
Protocol EXOline-TCP
Power requirement + 2,5 VA in addition to the basic requirement
Measurements in mm

Mobile Configuration and Commissioning Control Panel S-E3-DSP

Description

Directly connected to AIAS “combox” the pocket display module enables access to the system configuration and variables for reading and editing directly at site. Different user authorisation and access levels are adjustable.

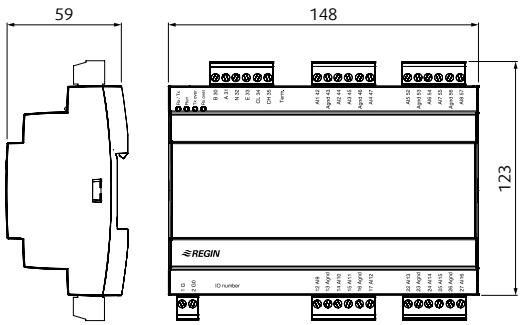
Technical Data and Dimensions

Protection class IP40
Power supply internal via communication cable from AIAS “combox”
Connection cable 3 or 10 m with RJ12 fast connector to AIAS “combox”
Display backlit, LCD, 4 rows with 20 characters
Character height 4.75 mm

AIAS Remote I/O Modul 16x AI

Description

The RIO module can be used for if additional measurement of analog values is required by the system. The unit communicates the values via ExoLine data bus to the AIAS “Combox” - max. two RIO modules . The 16 analog inputs are configurable for signals of DC0-10V, 4-20mA, resistive load 10kOhm, Pt100, Ni100. This makes possible connecting of different measuring transmitters. The 10kOhm input can be used for connecting the VAV-feedback signals from the VAV controllers without bus connectivity (common in retrofit).



Technical Data and Dimensions

Supply voltage	24 V AC/DC ±15 %, 50...60 Hz
Power consumption	Max. 3.5 VA
Communication	EXOline, CAN-Bus
Operating temperature	0...50°C
Storage temperature	-20...+70°C
Ambient humidity (operation)	Max. 90 % RH
Protection class	IP20
Mounting	DIN-rail or in a standard casing
Dimensions	148 x 123 x 59 mm (WxHxD) incl. terminals
DIN-rail module width	8.5

INPUTS	
Analogue inputs, AI	PT1000, Ni1000 (only CAN-Bus), microsensors, 0...10 kΩ, 0...10 V, 0(4)...20 mA
	Low Voltage Directive (LVD) standards: This product conforms to the requirements of the European Low Voltage Directive (LVD) 2006/95/EC through product standards EN 60730-1 and EN 60730-2-9.
EMC emissions & immunity standards:	This product conforms to the requirements of the EMC Directive 2004/108/EC through product standards EN 61000-6-3:2001 and EN 61000-6-1:2001.
RoHS:	This product conforms to the Directive 2011/65/EU of the European Parliament and of the Council.

AIAS Room Controller RC-C3DOC

Description

The room controller manages the room air quality by measuring the actual selected value like temperature, CO2 content, humidity etc. Compared with setpoint the control value for connected VAV controller(s) is generated Override functions like occupancy, window contact, external emergency interlocks, change-over, free cooling are available.
The bus communication with AIAS „combox“ passes via ExoLine.

Technical Data and Dimensions

Supply voltage	18...30 V AC, 50...60 Hz
Internal consumption	2.5 VA
Ambient temperature	EXOline, CAN-Bus
Ambient humidity	Max 90 % RH
Storage	-20...+70°C
Terminal blocks	Lift type for cable cross-section 2.1 mm²
Protection class	IP20
Material casing	Polycarbonate, PC

COLOUR	
Cover	Polar white RAL9010
Bottom plate	Light gray

Weight	110 g
Dimensions	95 x 95 x 28 mm

COMMUNICATION	
Type	RS485 (EXOline)
Communication speed	9600, 19200, 38400 bps (EXOline)
Galvanically isolated port	No
Memory	
Non-volatile (EEPROM)	All settings and configurations are preserved

BUILT-IN TEMPERATURE SENSOR	
Type	NTC, linearised, 15 kOhm
Measuring range	0...50°C
Accuracy	+/-0.5°C at 15...30°C
Display type	LCD with background illumination
LVD, Low Voltage Directive	This product conforms with the requirements of European LVD standard IEC 60 730-1. EMC emission and immunity standard. This product conforms to the requirements of the EMC Directive 2004/108/EC through product standards EN 61000-6-1 and EN 61000-6-3.
RoHS	This product conforms to the Directive 2011/65/EU of the European Parliament and of the Council.

INPUTS	
AI1	PT1000-sensor, 0...50°C, accuracy +/- 0.1°C
UI	AI: PT1000-sensor, 0...100°C, accuracy +/- 0.2°C or AI2: 0...10 V or DI
CI	Window contact
DI	Closing potential-free contact connected to +C in one end
OUTPUTS	
UO	DO:24 V AC, max 2.0 A or AO:0...10 V DC, max 5 mA
+C, power output for DI only	24 V DC, max 10mA, short circuit protected

Installation

It is recommended to use shielded cables for communication between main controller, room units and damper actuators. These cables must be separated from power supply cables for equipments like motors to prevent interferences. As much distance as possible should exist between communication and power supply cables, especially if they are installed parallel to each another. Maximum length for communication cable is 1000 meters. If necessary, 24 V power supply can be in the same cable as communication. Cable section and distances change depending on number of room units and actuators. For 24 V AC it is recommended to use a safety transformer. For transformer size (VA), it is necessary to add all power values from main controllers (12 VA each), damper actuators (5 VA each), room units (2,5 VA each) and CO2 sensors (3 VA each for Systemair transmitters, other brands to be confirmed). Based in total VA power for 24 V AC power supply, recommended cable section and maximum length can be determined according with type of cable used. For 24 V DC it is recommended to use a rectified AC power supply with a filter capacitor. For transformer size (W), it is necessary to add all power values from main controllers (6 W each), damper actuators (3 W each), room units (1,5 W each) and CO2 sensors (3 W each for Systemair transmitters, other brands to be confirmed). Based in total W power for 24 V DC power supply, recommended cable section and maximum length can be determined according to the type of cable used.

Wiring/Connection

For a well defined, clearly arranged and easily maintainable wiring and connection of the AIAS system and supporting components it is recommended to use standard electrical connection boxes and switchboards with precisely described terminal bars completed by a skilled electrician.

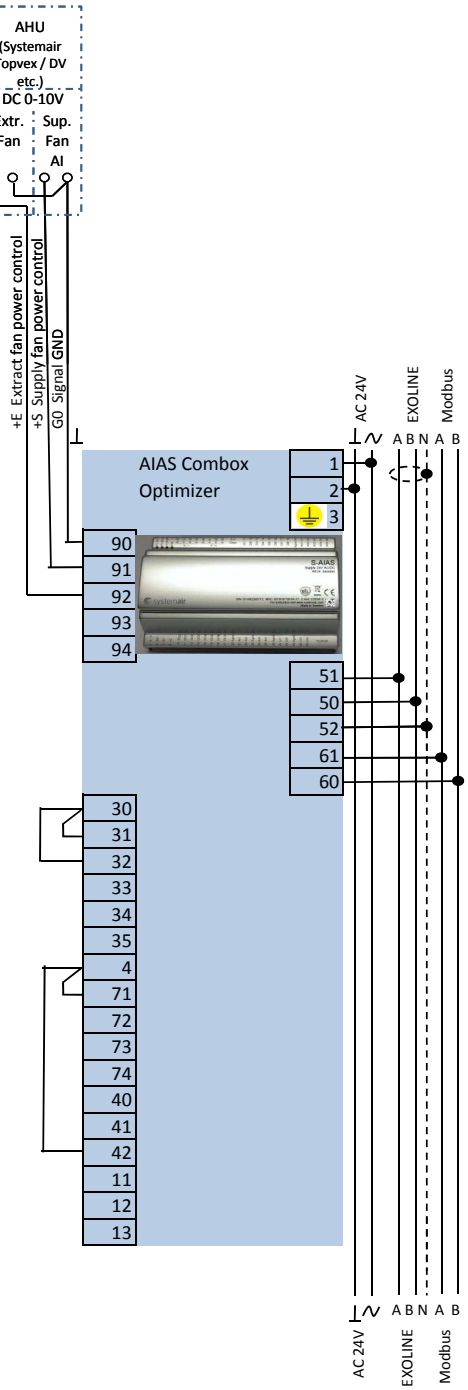
Due to a partially free customable hardware configuration it is recommended to use Connection/Allocation sheets. See below the previews. The original A3-format sheets can be printed from separate PDF file. They cover the basic hardware arrangements of central control- and RIO modules, room controls. They can be manually edited, adapted and filled with information about addressing, virtual and physical allocation of measurement and control points and operational variables.

Important Wiring and Connection Details for Easy Setup and Operation of the System:

1. The AIAS Combox must be connected to the general earthing system of the site by the terminal 3.
2. The 24V power supply common potential (G0) connected to the AIAS Combox terminal 2 must be correctly connected to all the system elements like room controllers and VAV dampers by G0 common potential terminals. The power supply phase potential (G) connected to the terminal 1 on the AIAS Combox must be correctly connected to all the system elements like room controllers, VAV dampers etc. by the G poer supply phase terminals.
3. The Exoline communication must be connected correctly to all communicating devices: The line A to A-terminals and the line B to B-terminals without crossing them.
4. The Modbus communication must be connected correctly to all communicating devices: The line A to A-terminals and the line B to B-terminals and line N to N-terminals without crossing them.
5. If only one AIAS-Combox is used for the zone optimization, so there is no slave unit sending analog setpoint values for fans to this combox, the terminals 31 and 32 must be connected to the terminal 30.
6. If no remote ON/OFF signal for AIAS-Combox is connected, then the terminals 71 and 4 shall be connected together.

Project	Plant	Location	Date	Sign

Address	Default/ Predefined/Free Exoline/ Modbus Allocated		Name	Description	Wiring AHU, BMS	Terminals to room/ zone	Device make/ type	Terminals to field	Wiring field
				Power supply G					
				Power supply G0					
				Earthing - connect to building earthing system!					
				AO: DC 10V (GND)					
				AO: Supply fan power setpoint DC 10V (+)					
				AO: Exhaust fan power setpoint DC 10V (+)					
				AO: Supply fan demand value to master					
				AO: Extract fan demand value to master					
				Exoline (A)					
				Exoline (B)					
				Exoline (N)					
				Modbus (A)					
				Modbus (B)					
				Agnd					
				AI: Supp. fan demand from slave (shunt if no slave)					
				AI: Extr. fan demand from slave (shunt if no slave)					
				Agnd					
				AI: Outdoor temperature					
				AI: room temperature informative value					
				DI: AIAS Remote ON(1)/OFF(0), shunt 4 if no remote					
				DI: Remote Summer(1)/Winter(0) change-over					
				DI: Remote free cooling Enable(1)/Disable(0)					
				DI: CO2 Sensors test Enable(1)/Disable(0)					
				Agnd					
				DI: External common alarm Active(1)/Inactive(0)					
				DI: External fire alarm Active(0)/Inactive(1)					
				DO: Start/Stop supply fan					
				DO: Start/Stop extract fan					
				DO: Collective alarm					



Wiring diagram 1: AIAS combox

Project	Plant	Location	Date	Sign

Address	Default/ Predefined/Free	Exoline/ Modbus Allocated		Name	Description	Wiring room/ zone	Terminals to room/ zone	Device make/ type	Terminals to field	Wiring field
					Power supply G			AIAS RIO 16x AI	1	AC 24V
					Power supply G0				2	
					Exoline (A)				31	EXOLINE
					Exoline (B)				30	
					AI1:		42			
					Agnd		43			
					AI2:		44			
					AI3:		45			
					Agnd		46			
					AI4:		47			
					AI5:		52			
					Agnd		53			
					AI6:		54			
					AI7:		55			
					Agnd		56			
					AI8:		57			
					AI9:		12			
					Agnd		13			
					AI10:		14			
					AI11:		15			
					Agnd		16			
					AI12:		17			
					AI13:		22			
					Agnd		23			
					AI14:		24			
					AI15:		25			
					Agnd		26			
					AI16:		27			

DC 10V +E +S ⊥

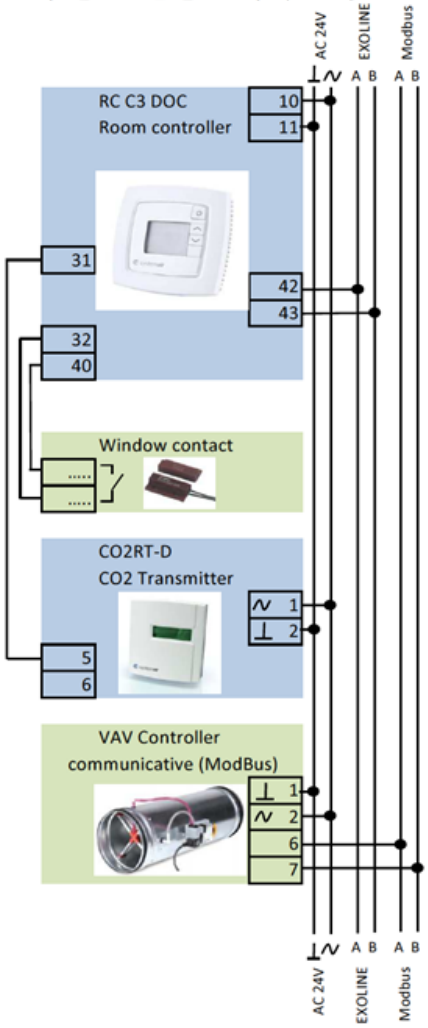
⊥ ~ A B A B

AC 24V EXOLINE Modbus

Wiring diagram 2: AIAS RIO module

Project	Plant	Location	Date	Sign

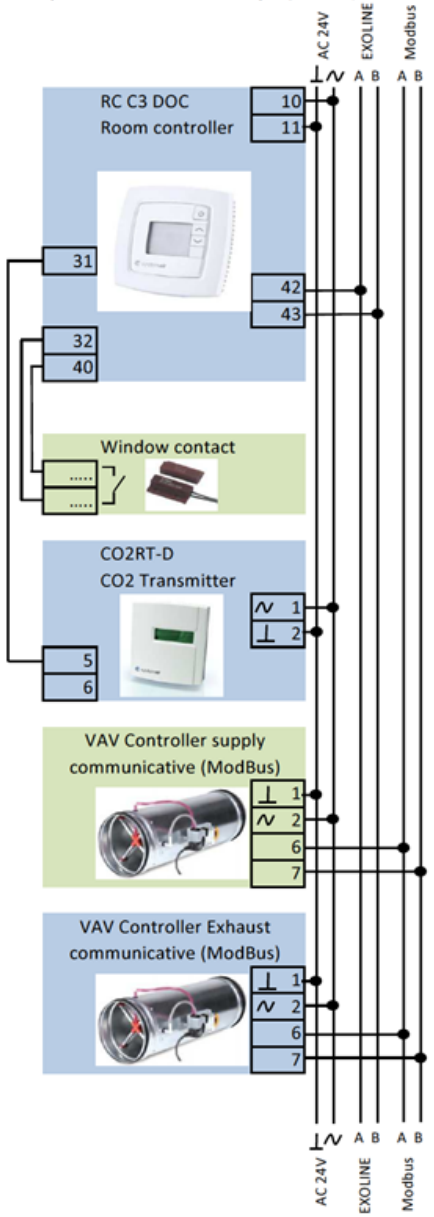
Address	Default/ Predefined/Free	Exoline/ Modbus	Allocated	Name	Description	Wiring room/ zone	Terminals to room/ zone	Device make/ type	Terminals to field	Wiring field
					Power supply G					
					Power supply G0					
	F	E			Room temperature (sensor in RC)					
	F	E			Occupancy (switch in RC)					
					Exoline (A)					
					Exoline (B)					
					DI1					
					+C					
	F	E								
	F	E			CO2 level [ppm]					
					signal neutral					
	F	M			Modbus RS485/ D- (A)					
					Modbus RS485/ D+ (B)					



Wiring diagram 3: IRC (Individual Room Control) 1 × VAV with MODBUS communication

Project	Plant	Location	Date	Sign

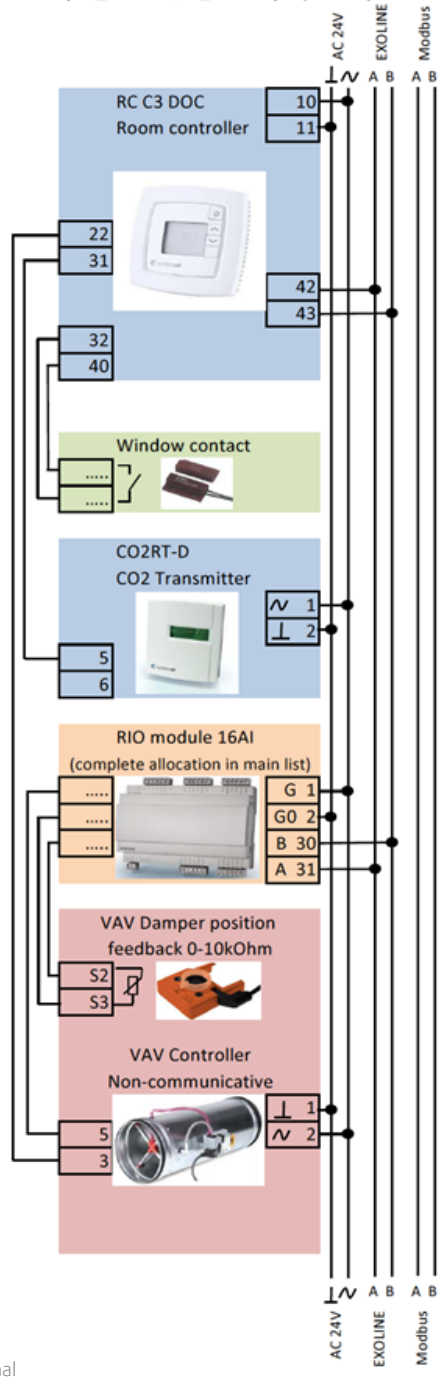
Address	Default/ Predefined/Free	Exoline/ Modbus Allocated		Name	Description	Wiring room/ zone	Terminals to room/ zone	Device make/ type	Terminals to field	Wiring field
					Power supply G					
					Power supply G0					
	F	E			Room temperature (sensor in RC)					
	F	E			Occupancy (switch in RC)					
					Exoline (A)					
					Exoline (B)					
					DI1					
					+C					
	F	E								
	F	E			CO2 level [ppm]					
					signal neutral					
	F	M			Modbus RS485/ D- (A)					
					Modbus RS485/ D+ (B)					
	F	M			Modbus RS485/ D- (A)					
					Modbus RS485/ D+ (B)					



Wiring diagram 4: IRC (Individual Room Control) 2 × VAV with MODBUS communication

Project	Plant	Location	Date	Sign

Address	Default/ Predefined/Free	Exoline/ Modbus Allocated		Name	Description	Wiring room/ zone	Terminals to room/ zone	Device make/ type	Terminals to field	Wiring field
					Power supply G					
					Power supply G0					
	F	E			Room temperature (sensor in RC)					
	F	E			Occupancy (switch in RC)					
					UO3					
					Exoline (A)					
					Exoline (B)					
					DI1					
					+C					
	F	E								
	F	E			CO2 level [ppm]					
					signal neutral					
	P-F	E			Analog input AI.....					
					Ground for analog input					
	P-F	E			Analog input AI.....					
	F	E			VAV-Actual flow value 0-10V					
	F	E			VAV-Setpoint 0-10V					



Wiring diagram 5: IRC (Individual Room Control) 1 × VAV with analog damper position feed-back signal

Project	Plant	Location	Date	Sign

Address	Default/ Predefined/Free	Exoline/ Modbus	Allocated	Name	Description	Wiring room/ zone	Terminals to room/ zone	Device make/ type	Terminals to field
					Power supply G			RC C3 DOC Room controller	10
					Power supply G0				11
	F	E			Room temperature (sensor in RC)				
	F	E			Occupancy (switch in RC)				
					UO3		22		
							31		
					Exoline (A)				42
					Exoline (B)				43
					DI1		32		
					+C		40		
								Window contact	
	F	E					.....		
							.....		
								CO2RT-D CO2 Transmitter	
									1
									2
	F	E			CO2 level [ppm]		5		
					signal neutral		6		
								RIO module 16AI (complete allocation in main list)	
	P-F	E			Analog input AI.....		.....		G 1
					Ground for analog input		.....		G0 2
	P-F	E			Analog input AI.....		.....		B 30
	P-F	E			Analog input AI.....		.....		A 31
					Ground for analog input		.....		
	P-F	E			Analog input AI.....		.....		
								VAV Damper position feedback 0-10kOhm	
							S2		
							S3		
								VAV Controller supply master Non-communicative	
	F	E			VAV-Actual flow value 0-10V		5		1
	F	E			VAV-Setpoint 0-10V		3		2
								VAV Damper position feedback 0-10kOhm	
							S2		
							S3		
								VAV Controller exhaust slave Non-communicative	
					VAV-Setpoint 0-10V		3		1
	F	E			VAV-Actual flow value 0-10V		5		2

AC 24V | EXOLINE A B | Wiring field | Modbus A B

Wiring diagram 6: IRC (Individual Room Control) 2 × VAV with analog damper position feed-back signal

System Configuration

Addressing

The communicating system components like room controllers, VAV controllers, remote I/O modules must have assigned unique addresses identifying them at the bus communication.

The unique addresses of the room controllers and the RIO modules communicating on EXOLine are set for each device by the manufacturer. They are composed of two numbers PLA(3 digits), ELA(3 digits). They can be found on the labels and stickers attached to each device (refer also to user manuals of these devices).

The VAV controllers (Systemair Optima-BLC1MOD) communicating on Modbus have to be assigned before operation. This is done by using the ZTH-GEN or ZTH-EU configuration tool from Belimo.

Connect the VAV controller to the power supply (wires 1,2).

Use the cable ZK1-GEN from Belimo connected to the configuration tool from one side and to the VAV controller (bayonet socket on the controller front).

Scroll the menu on the tool (keys arrows up/down) down to point “MOD address” Change the address value (keys +/-), confirm (key OK) – the address is set.

Disconnect tool from controller.

The addresses must be set from 1 to 30 for each controller connected to the same AIAS-Combox (no double assignment of the same number to different controllers!). The addressing of the VAV controllers must be continuous, e.g. „1, 2, 3, 4, 5“ etc. It must NOT contain unassigned numbers e.g. „1, , 3, , 5“ etc. The controllers connected to different AIAS-Combox units can have the same addresses.

In the configuration menu these VAV-controllers with their addresses (MOD1 to MOD30) shall be assigned each to one of the the program modules called Damper 1 to Damper 30 (see details in chapter „AIAS control/configuration menu“). So the AIAS system can identify the connected VAV controllers by their unique Modbus addresses

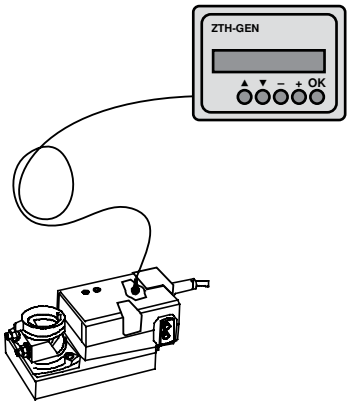


Fig 4: Connection of ZTH-GEN (ZTH-EU) to VAV compact controller

AIAS Configuration Tools

The AIAS system is based on pre-programmed software modules that can be assigned to physical objects (sensors, controllers, actors), activated and adjusted in configuration menu by a display tool.

The mobile display tool can be connected to AIAS Combox by a cable with RJ12 connector.

Lower the main configuration points are shown (pages 17 - 22).

The menu can be navigated on 4-line text display by arrows-pushbuttons

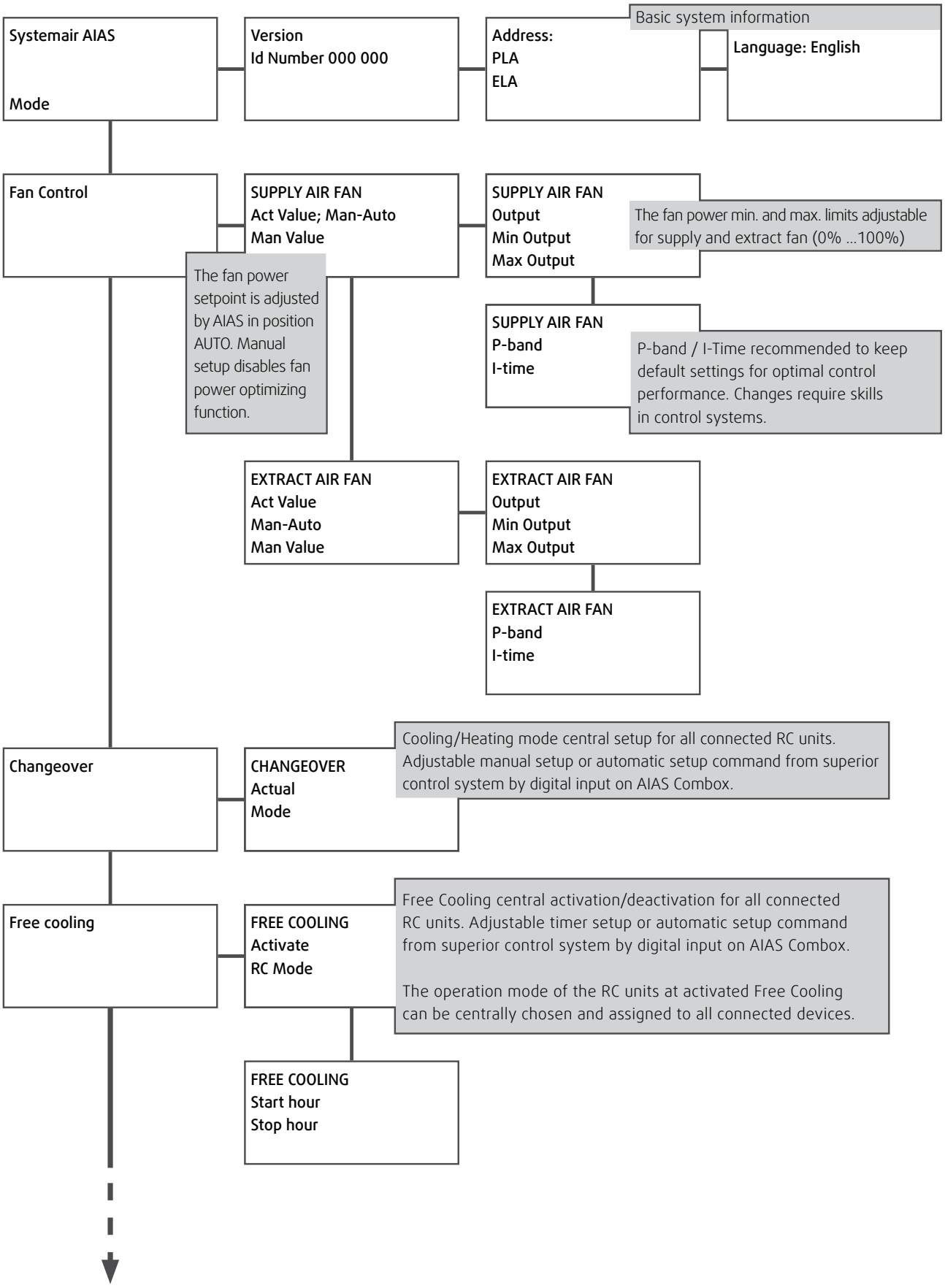
The Left/Right buttons navigate between higher and lower levels of the menu structure.

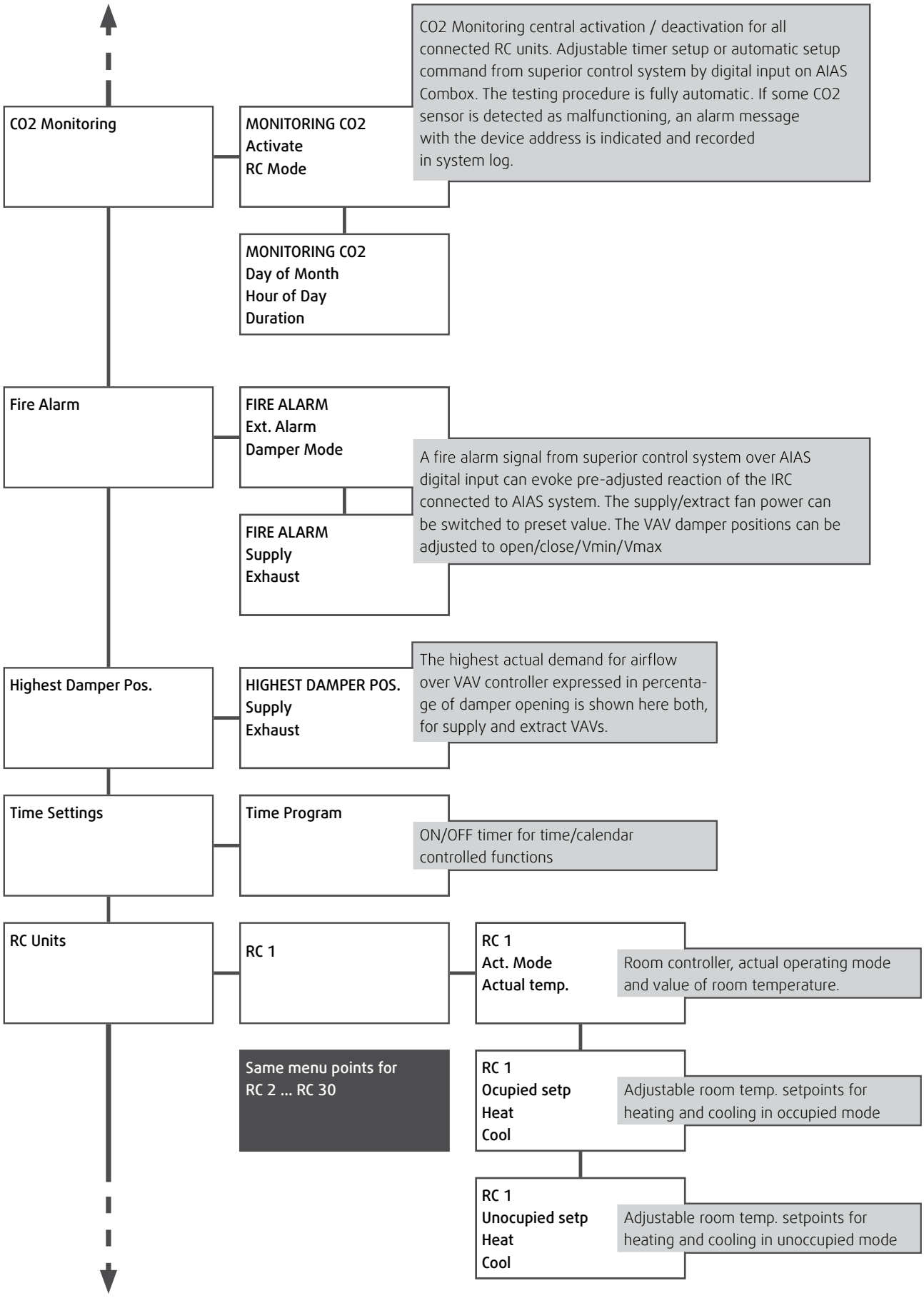
The Up/Down buttons navigate the choices on a single menu level and allow to change the variable values.

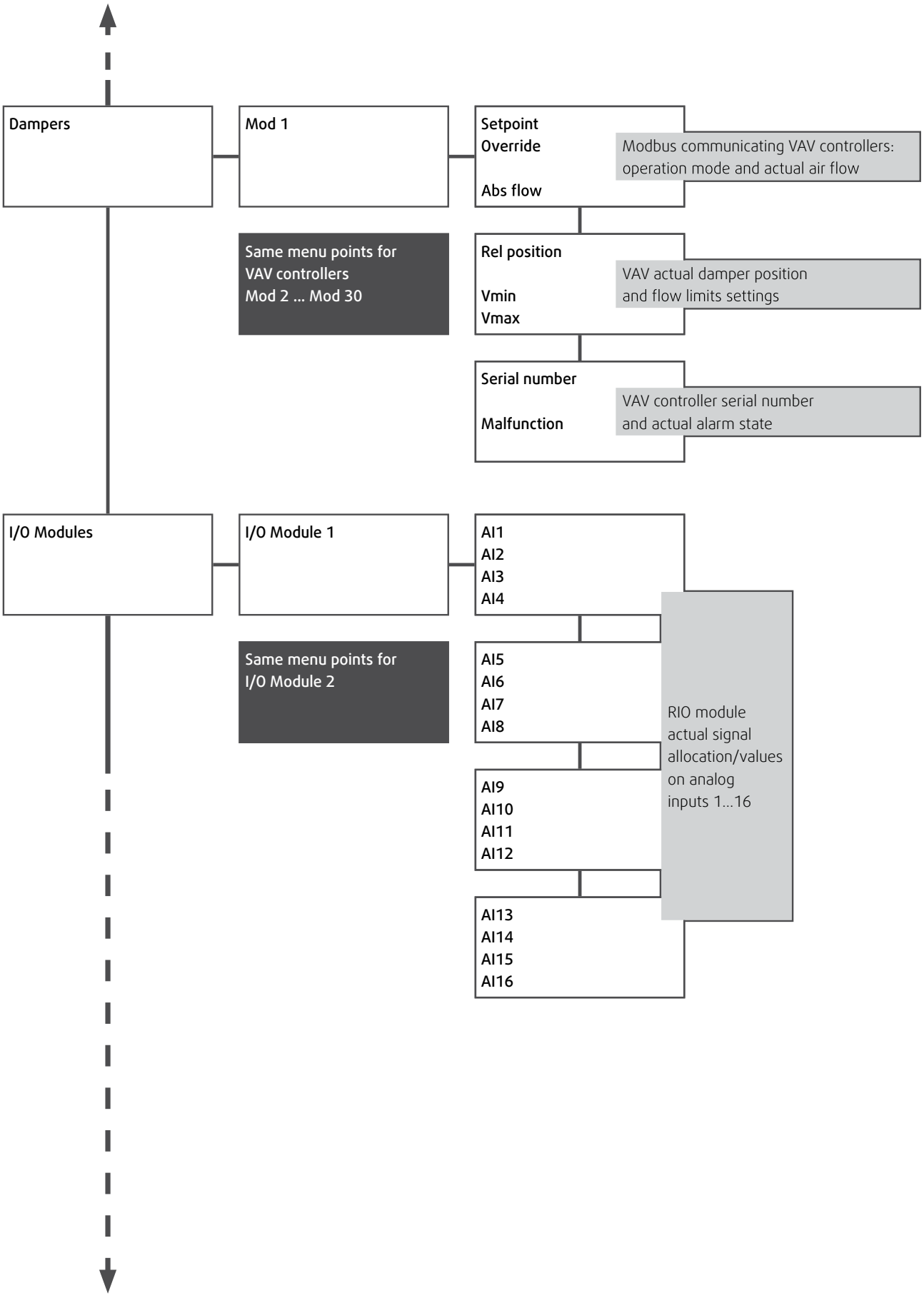
The OK button confirms the choice in the menu or the chosen variable values.

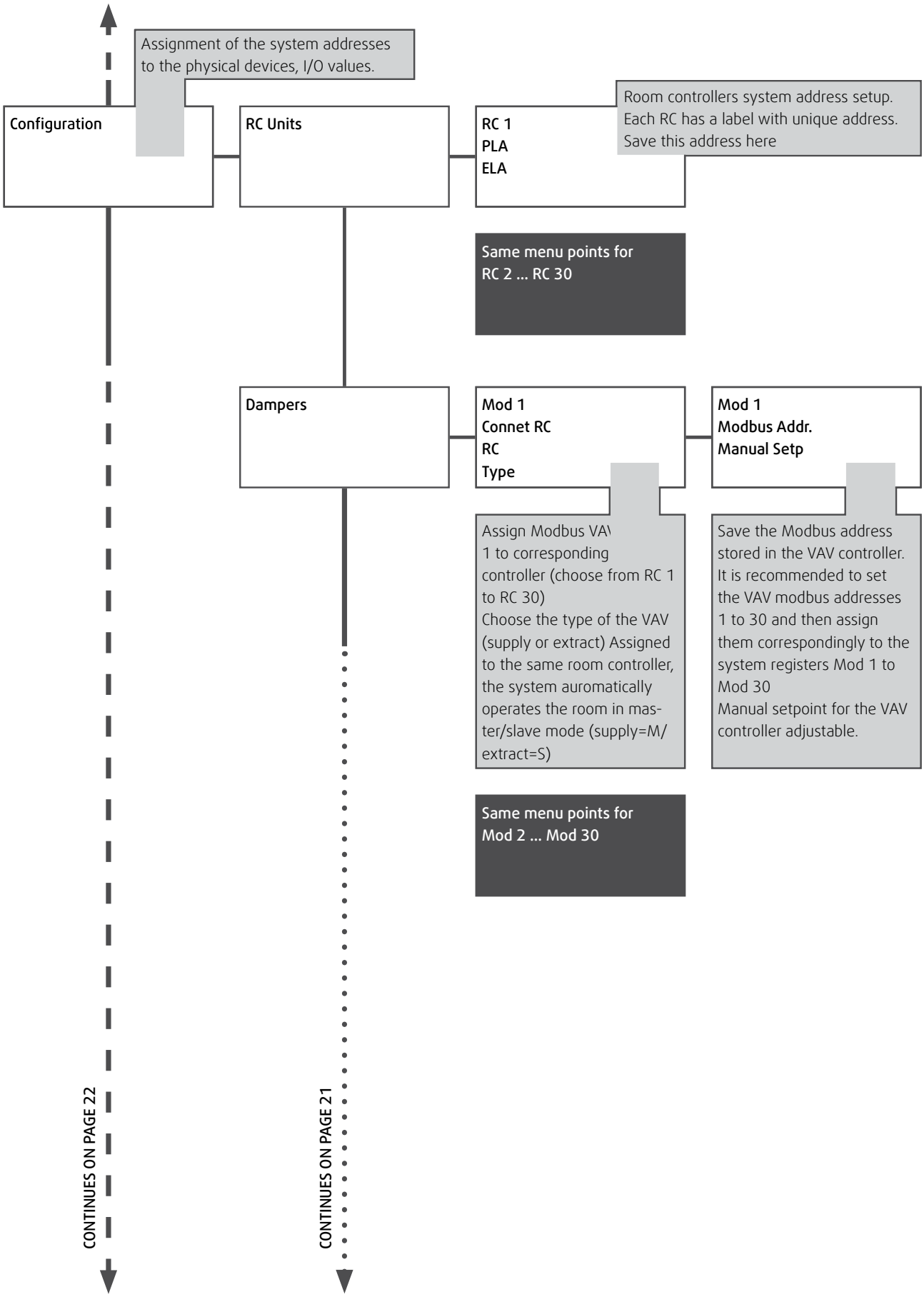
The ESC button interrupts the the actual step of setup without saving the changes.

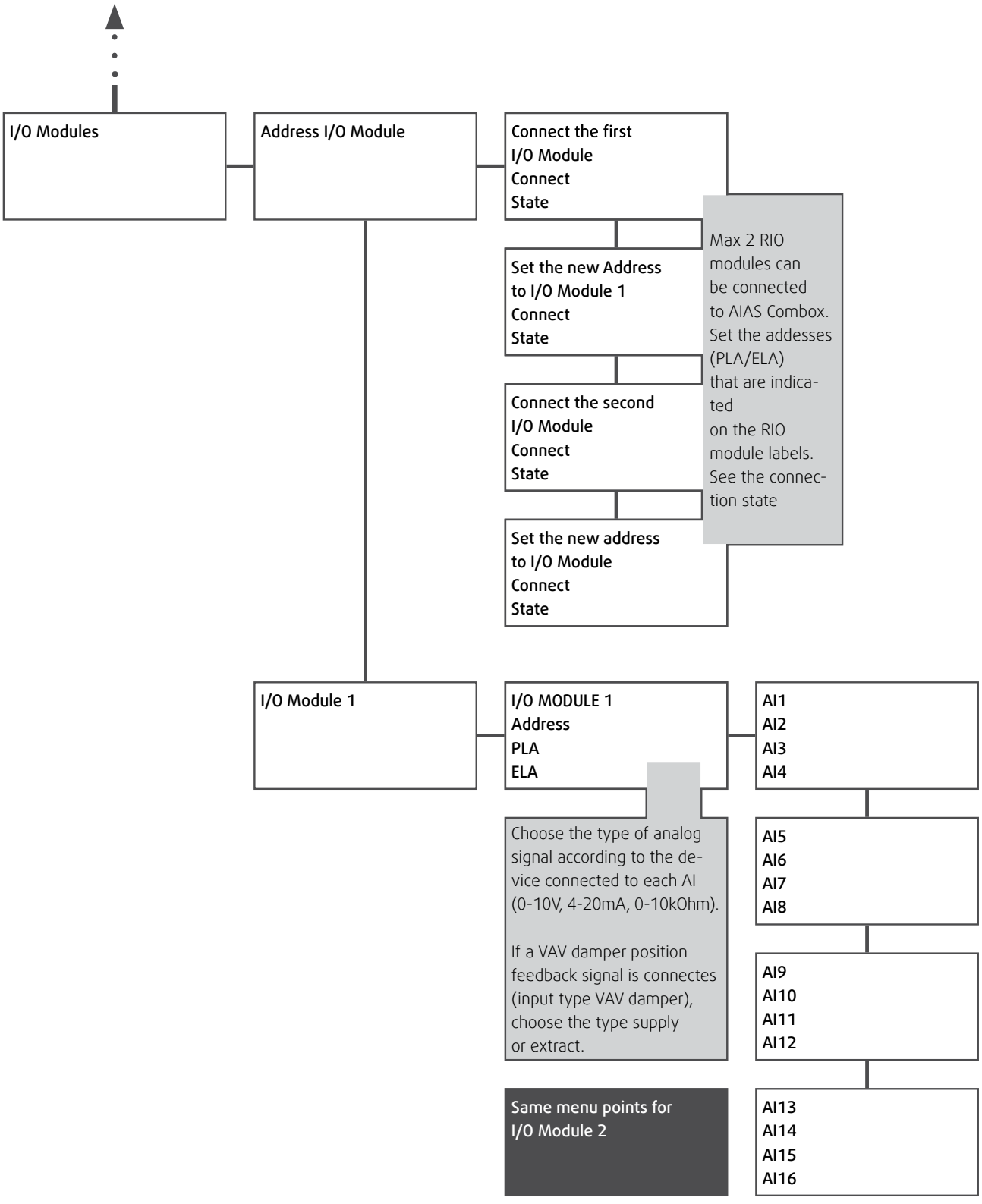
The orange LED flashing light indicates possibility to change and save variable values on the actually chosen menu point.

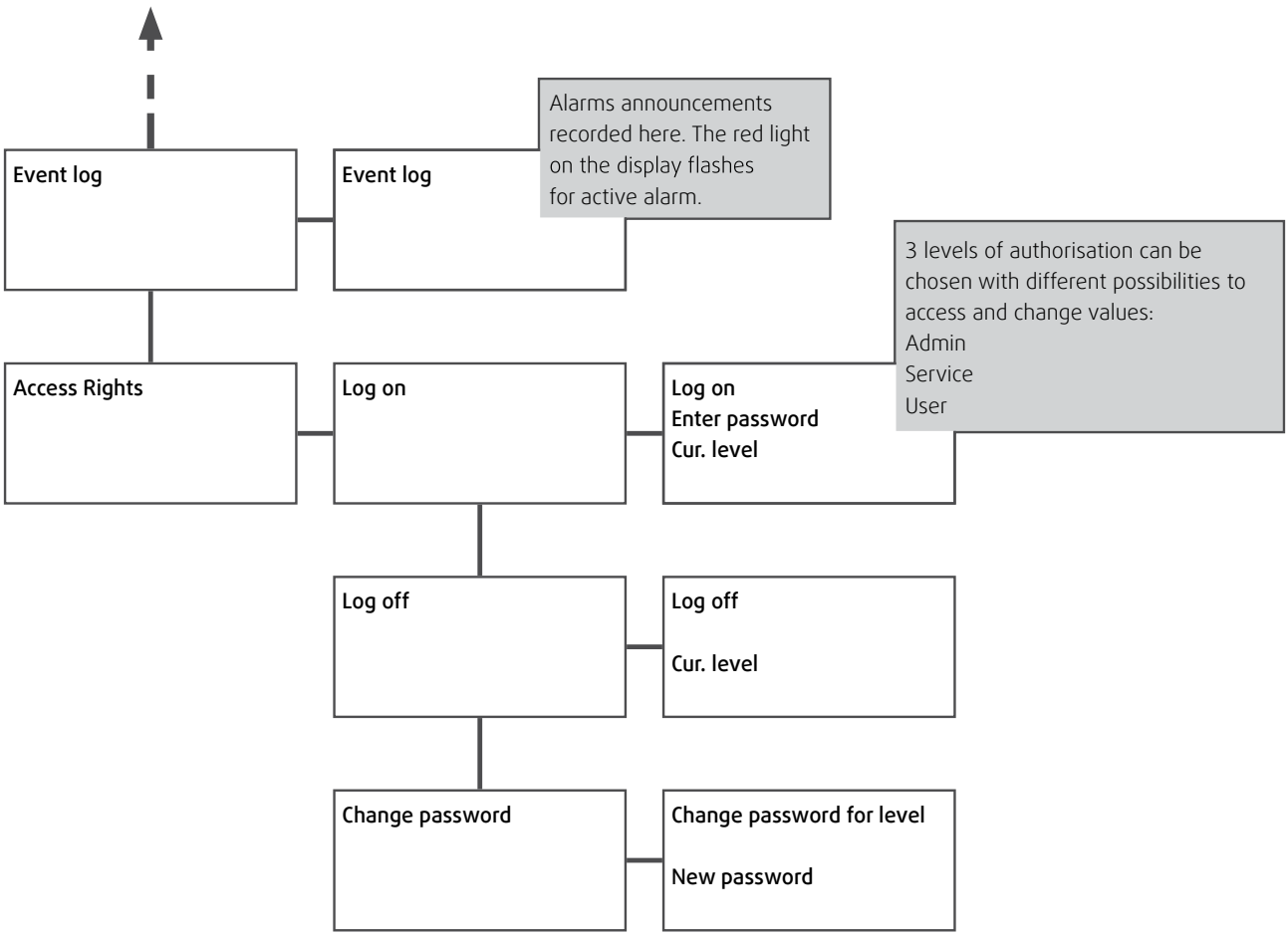

Systemair AIAS
Mode
Version
Id Number 000 000
Address:
PLA
ELA
Basic system information
Language: English
Fan Control
SUPPLY AIR FAN
Act Value; Man-Auto
Man Value
SUPPLY AIR FAN
Output
Min Output
Max Output
The fan power min. and max. limits adjustable for supply and extract fan (0% ...100%)
The fan power setpoint is adjusted by AIAS in position AUTO. Manual setup disables fan power optimizing function.
SUPPLY AIR FAN
P-band
I-time
P-band / I-Time recommended to keep default settings for optimal control performance. Changes require skills in control systems.
EXTRACT AIR FAN
Act Value
Man-Auto
Man Value
EXTRACT AIR FAN
Output
Min Output
Max Output
EXTRACT AIR FAN
P-band
I-time
Changeover
CHANGEOVER
Actual
Mode
Cooling/Heating mode central setup for all connected RC units. Adjustable manual setup or automatic setup command from superior control system by digital input on AIAS Combox.
Free cooling
FREE COOLING
Activate
RC Mode
Free Cooling central activation/deactivation for all connected RC units. Adjustable timer setup or automatic setup command from superior control system by digital input on AIAS Combox.
The operation mode of the RC units at activated Free Cooling can be centrally chosen and assigned to all connected devices.
FREE COOLING
Start hour
Stop hour

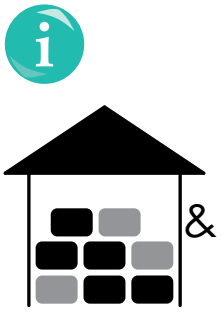

CO2 Monitoring
MONITORING CO2
Activate
RC Mode
CO2 Monitoring central activation / deactivation for all connected RC units. Adjustable timer setup or automatic setup command from superior control system by digital input on AIAS Combox. The testing procedure is fully automatic. If some CO2 sensor is detected as malfunctioning, an alarm message with the device address is indicated and recorded in system log.
MONITORING CO2
Day of Month
Hour of Day
Duration
Fire Alarm
FIRE ALARM
Ext. Alarm
Damper Mode
A fire alarm signal from superior control system over AIAS digital input can evoke pre-adjusted reaction of the IRC connected to AIAS system. The supply/extract fan power can be switched to preset value. The VAV damper positions can be adjusted to open/close/Vmin/Vmax
FIRE ALARM
Supply
Exhaust
Highest Damper Pos.
HIGHEST DAMPER POS.
Supply
Exhaust
The highest actual demand for airflow over VAV controller expressed in percentage of damper opening is shown here both, for supply and extract VAVs.
Time Settings
Time Program
ON/OFF timer for time/calendar controlled functions
RC Units
RC 1
RC 1
Act. Mode
Actual temp.
Room controller, actual operating mode and value of room temperature.
Same menu points for
RC 2 ... RC 30
RC 1
Ocupied setp
Heat
Cool
Adjustable room temp. setpoints for heating and cooling in occupied mode
RC 1
Unocupied setp
Heat
Cool
Adjustable room temp. setpoints for heating and cooling in unoccupied mode


Dampers
Mod 1
Setpoint
Override
Abs flow
Modbus communicating VAV controllers: operation mode and actual air flow
Same menu points for VAV controllers Mod 2 ... Mod 30
Rel position
Vmin
Vmax
VAV actual damper position and flow limits settings
Serial number
Malfunction
VAV controller serial number and actual alarm state
I/O Modules
I/O Module 1
AI1
AI2
AI3
AI4
Same menu points for I/O Module 2
AI5
AI6
AI7
AI8
AI9
AI10
AI11
AI12
AI13
AI14
AI15
AI16
RIO module actual signal allocation/values on analog inputs 1...16


Assignment of the system addresses to the physical devices, I/O values.
Configuration
RC Units
RC 1
PLA
ELA
Room controllers system address setup. Each RC has a label with unique address. Save this address here
Same menu points for RC 2 ... RC 30
Dampers
Mod 1
Connet RC
RC
Type
Mod 1
Modbus Addr.
Manual Setp
Assign Modbus VA\ 1 to corresponding controller (choose from RC 1 to RC 30)
Choose the type of the VAV (supply or extract) Assigned to the same room controller, the system auromatically operates the room in mas-ter/slave mode (supply=M/ extract=S)
Save the Modbus address stored in the VAV controller. It is recommended to set the VAV modbus addresses 1 to 30 and then assign them correspondingly to the system registers Mod 1 to Mod 30
Manual setpoint for the VAV controller adjustable.
Same menu points for Mod 2 ... Mod 30
CONTINUES ON PAGE 22
CONTINUES ON PAGE 21


I/O Modules
Address I/O Module
Connect the first I/O Module Connect State
Set the new Address to I/O Module 1 Connect State
Connect the second I/O Module Connect State
Set the new address to I/O Module Connect State
Max 2 RIO modules can be connected to AIAS Combox. Set the addesses (PLA/ELA) that are indicated on the RIO module labels. See the connection state
I/O Module 1
I/O MODULE 1 Address PLA ELA
AI1 AI2 AI3 AI4
AI5 AI6 AI7 AI8
AI9 AI10 AI11 AI12
AI13 AI14 AI15 AI16
Choose the type of analog signal according to the device connected to each AI (0-10V, 4-20mA, 0-10kOhm).
If a VAV damper position feedback signal is connectes (input type VAV damper), choose the type supply or extract.
Same menu points for I/O Module 2





-40°C ... +50°C

≤ 95%

-20°C ... +40°C

≤ 95%