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Domestic Ventilation with Heat Recovery
Application Description
Product Page
KNX-LUNOS-CONTROL4-IW

HVAC
Lunos

Domestic Ventilation with Heat Recovery - KNX-LUNOS-CONTROL4-IW	Product Group 10

Application:

The module KNX-LUNOS-Control4 is able to control the decentralized Ventilation equipment from Lunos (www.lunos.de) via the KNX bus.

- ventialtion units e^2 and e^{go} with heat recovery
- ventialtion units   **Silvento FK**, **Ra 15-60** and **ACM-Modul**
  as pure exhaust air fan

Up to 4 ventilation devices are powered by a module.
Several modules can be networked together via the KNX bus to allow a coordinated operation.
A direct control of the ventilation units can be done on the existing switch / switch inputs.

LUNOS
energyefficient

ETS-Application: **Arcus_Lunos_Ex.vd4**

KNX-LUNOS-CONTROL4	Article	Article-Description	Article No.
EIB/KNX		Document: 2900_dx_Lunos.pdf	
	KNX-LUNOS-CONTROL4-IW	The module is able to control the decentralized Ventilation with heat recovery from LUNOS operation temperature -5 .. +45°C In-wall mounting in dry inner areas IP20	65001001
	Hybrid ventilation system with e^2 and AB 30/60	technical datas: www.lunos.de/?page_id=170	

1 Application Description

Active Principles and Application

The module KNX-LUNOS-Control4 is able to control the decentralized ventilation equipment from Lunos (www.lunos.de) via the KNX bus.

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The KNX-Moduls KNX-LUNOS-CONTROL4 can be set up by using ETS (Tool Software) with the associated applications program.
The device is delivered un-programmed.
All functions are parameterized and programmed by ETS.

Functions

- power supply of the fan via low voltage 24..32VDC
- operation of 2 ventilation pairs (4 fans) with one modul
- moduls are cacadable (Master/Slave-function)
- control of the fan stage and direction as well as heat recovery
- manual control of the fan stages via binary inputs (switch/push button) or KNX-telegram

- Adjustment of fan stage and heat recovery according by values:

    - realtive humidity (inside) as discharge humidity to atmosphere
    - absolute humidity (inside / outside) as cellar drying
    - temperature (inside) as building protection
    - temperature (inside / outside) for optimisation of heat recovery
    - temperature (inside / outside / setpoint) for support of heating/cooling
    - CO2-concentration

- The values temperature (inside / outside), humidity and CO2-concentration has to be provided by other KNX-devices
- exhaust air operation to support separated exhaust air devices
- exhaust air operation (in combination or stand alone)
- compensation of the output resistance posible(long pipeline length)
- operation HVAC-Mode corresponding to KNX-standard

- operation modes:

    - comfort (HVAC)
    - standby (HVAC)
    - night operation(HVAC)
    - temperature protection (HVAC)
    - rush airing (extended HVAC-Mode)
    - silent mode(OFF) (extended HVAC-Mode)
    - sommer operation (switch object)
    - night operation(switch object)

- All HVAC operations are free configurable in the expert mode.
- Automatical indication of filter change to accomplish the replacment time.
- The filter change has to be confirmed,to reset the filter change alarm.

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2 ETS Parameter and Objects

2.1   Function Block   Configuration

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Function Block   Configuration - Parameter

Parameter	Settings	Description
Configuration	Basic/Master	Standard adjustment for stand-alone application with all normal presettings.
	Basic/Master + Exhaust	Standard adjustment for stand-alone application with all normal presettings. The second pair is operating in exhausted air mode.
	Basic/Slave	Minimal configuration, this modul is controled by another module which is working as a Mastrer-modul (Master-Mode)
	Basic/Slave + Exhaust	like Basic/Slave, The second pair is operating in exhausted air mode.
	Expert/Master Expert/Master + Exhaust Expert/Slave Expert/Slave + Exhaust	like basic-configurationen, except additional parameters (functional block HVAC).
Fan Type	E^2 EGO	adjustement of the used airtype
DPT for Stagecontrol	Fan Scale [0..100%] Fan Scale [0-3]	KNX conform
Lead Funktions only.../Master... Configuration		
Temperature	Inactive Active	Enables the control of fan stages and reverse times dependent on temperatures inside/outside. (requires additonal KNX-devices)
Humidity	Inactive Active	Enables the control of fan stages dependent on humidity inside/outside. (requires additonal KNX-devices)
CO2	Inactive Active	Enables the control of fan stages and reverse times dependent on CO2 concentration. (requires additonal KNX-devices)
Dry Contacts	Inactive Push button Switch Switch without internal use	Enables the integration of external push buttons / switches for control of fan stages and operation modes.
Debounce Time [ms]	2 - 100	only for „switch without internal logic"
General Overwrite Timeout [min]	0 - 240	**only in Basic/Master... configuration** Standard runtime for manuale changes of the HVAC-modes. After the termination of the runtime it will be changed into the standard operation mode. 0 means endless runtime.

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2.2 Function Block HVAC

This functional block is only active, when the Expert/Master configuration is enabled.

Function Block HVAC - Parameter

Parameter	Settings	Description
Default Mode	Comfort Standby Eco/Night Protection	**Operation Mode: (expert settings)** Defines which operation mode is choosed by missing HVAC-automatic. Standard operation mode: standby
Overwrite 1 - 3		
Priority	Equal Hierarchically 1-3	By setting „equal" the operation mode will be changed immediatly. If „hierarchicaliy" has the operation mode 1 the lowest and the operation mode 3 the highest priority.
OW 1 Mode	Comfort Standby Eco/night Protection Intense Ventilation Temperature Reduction Silence	**Operation Mode object 3: (expert settings)** Decide, which operation mode is choosed with object 3. Standard setting: Intense Ventilation
Timeout [min] (for OW 1 Mode)	0 - 240	**Time Control object 3:** After termination of 1..240 minute the control is changing into the standard operation mode. 0 means without automatical runtime

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Function Block   HVAC   -   Parameter   (continue)

Parameter	Settings	Description
OW 2 Mode	Comfort Standby Eco/night Protection Intense Ventilation Temperature Reduction Silence	**Operation Mode object 4: (experte settings)** Defines which operation mode is choosed with object 3. Standard settings: Silence
Timeout [min] (for OW 2 Mode)	0 - 240	**Time Control object 4:** After runtime of 1..240 minutes the control changes into the standard mode. 0 means without automatical runtime
OW 3 Mode	Comfort Standby Eco/night Protection Intense Ventilation Temperature Reduction Silence	**Operation Mode object 5: (expert settings)** determines, which operation mode with object 3 will be choosed. Standard settings: Comfort
Timeout [min] (for OW 3 Mode)	0 - 240	**Time Control object 5:** After runtime of 1..240 minutes the control changes into the standard mode. 0 means without automatical runtime

Function Block   HVAC   -   Objects

Object	Description
0 : Input, Operation Mode	The HVAC-operation mode is setting in general or via a switch clock.
1 : Input, Force Operation Mode	Overlays the automatic mode for the parameterizised time.
2 : Input, Night Mode	Overlays the automatic mode (without automatical sequence).
Objects in configuration Basic/Master	
3 : Input, Intense Ventilation	Overlays the automatic mode mit intense ventilation
4 : Input, Silence	Overlays the automatic mode mit silence
5 : Input, Comfort	Overlays the automatic mode with comfort
Objects in configuration Expert/Master	
3 : Input, Force Overwrite 1 Mode	Overlays the automatic mode (with automatic sequence) with paramter setting operation mode 1.

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Function Block   HVAC   -   Objects   (continue)

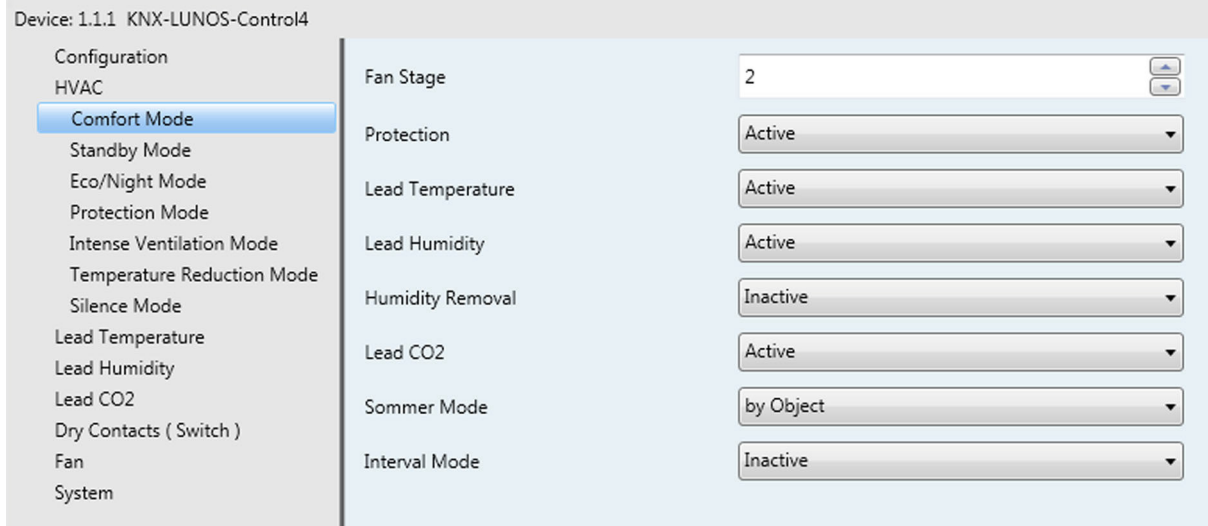| Object	Description
3 : Input, Force Overwrite 2 Mode	Overlays the automatic mode (with automatic sequence) with parameter setting operation mode 2.
3 : Input, Force Overwrite 3 Mode	Overlays the automatic mode (with automatic sequence) with parameter setting operation mode 3.

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2.3 Function Block HVAC Operation Mode Parameter

This function block is only active, when the Expert/Master mode is choosed.

Function Block HVAC - Operation Mode Parameter

Parameter	Settings	Description
- Comfort Mode **- Standby Mode** **- Eco/Night Mode** **- Protection Mode** **- Intense Ventilation Mode** **- Temperature Reduction Mode** **- Silence Mode**		
Fan stage	0 - 3	Choosed fan stage in this operation mode.
Protection	Inactive Active	Temperature protection, switch off at to low internal temperature.
Lead temperature	Inactive Active	Switching summer mode/heat recovery dependend of internal-/ outside-/ setpoint-/ temperature.
Lead humidity	Inactive Active	Increasing the fan stage by high relativer humidity.
Humidity Removal	Inactive Active	Humidity protection, cellar ventialtion dependend of the absolute interal humidity and absolute external humidity.
Lead CO2	Inactive Active	Increasing the fan stage by lower airquality.

Function Block HVAC - Operation Mode Parameter   (continue)

Parameter	Settings	Description
Summer Mode	Inactive by Object Static	switching to summer mode via object 9.
Interval Mode	Inactive Active	is switching the fans ON in regular intervals for determined time.

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2.4 Function Block   Fan

Function Block   Fan   -   Parameter

Parameter	Settings	Description
Overwrite	No Pairs Pair 1 Pair 2 Both Pairs	Is switching the objects 6/7/8 active for the pairs. Standard Settings: Both Pairs
Timeout [min]	0 - 240	After runtime of 1..240 minutes the control changes into the standard mode. 0 means without automatical runtime.
Reversion Time	**Only in Expert/Master mode !**	
Stage 1 Stage 2 Stage 3 Summer Mode	40 seconds in steps to 2 hours	**Attention:** By changing the standard settings the heat recovery can not be gauranteed.

Function Block   Fan   -   Objects

Object	Description
6 : IO, Fan Stage	Input for maunual control Output for actual stage DPT depending of *parameter configuration „DPT for Stagecontrol"* • Fan Scale [0-100%] • Fan Stage [0-3]
7 : IO, Manual Overwrite	Input/Output for manual fan stage control active.
8 : Input, Fan Stage Up/Down	Input for manual fan stage control up/down.
9 : Input, Summer Mode	Input for summer mode.

Function Block   Fan   -   Objects   (continue)

Object	Description
26 : Output, master / slave mode 26 : Input, master / slave mode	**configuration .../Master** DPT 5.001 (0 .. 100%), DPT 6.010 (-3 .. 3) **configuration .../Slave** DPT 5.001 (0 .. 100%), DPT 6.010 (-3 .. 3)
27 : Output, master / slave direction 27 : Input, master / slave direction	**configuration .../Master** direction information (*only by fan scaling [0-100%]*) **configuration .../Slave** direction select (*only by fan scaling [0-100%]*)

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2.5 Function Block System

Function Block System - Parameter

Parameter	Settings	Description
Cabel Resistance Fan 1 / 2 / 3 / 4 [mOhm]	0 - 2000	If there are long cable distance between module and fan the changing of the fancycles can be compensate. To that introduce the resistance of a conductor.
Interval periode --- Active time	1 h --- 15 min 4 h --- 30 min 12 h --- 60 min	within the interval period will be ventilated for the duration of the active time. Introduce for each HVAC-operation mode the interval is separately.
Fan flow rate	Default Custom	Both fans of the choosed pairs will be controled by the defined fan flow rate.
Only by Fan flow rate = Custom		
Stage1 / 2 / 3 [m³/h]	5 - 100	With changing of these settings,is the efficency not guarenteed.

Function Block   System   -   Parameter   (continue)

Parameter	Settings	Description
Applies to configuration without exhaust air		
Exhaust/Supply-Request Pair 1 -- Pair 2	None -- None Exhaust -- None Supply -- None Exhaust -- Exhaust Supply -- Exhaust Supply -- Supply	Via the input object 21, air requirement xx can the choosed pairs switched to exhaust air/incoming air mode.
Applies to configuration with exhaust air		
Exhaust/Supply-Request Pair 1	None Exhaust Supply	Via the input object 21, air requirement xx can pair 1 switched to exhaust air/incoming air mode.
Flow per fan [m³/h]	5 - 100	these settings serve for air flow adjustment.

Function Block   System   -   Objects

Object	Description
19 : Input, Exhaust Request	Switch input for using pair 2 as exhaust air device
20 : Input, Exhaust Lock	Switch input to deactivate basic ventilation
21 : Input, Air Request E^2 bzw 21 : Input, Air Request EGO (if exhaust/supply air request is active)	Enables the switch of the choosed ventilation pairs into exhaust air mode /incoming air mode (without delay).
22 : Output, Exhaust Request	Switch output to switch external fan in incoming air mode
25 : Input, System Lock	Locks all ventialtion and functions.
Object 26 in configuration .../Slave	
26 : Input, Master/Slave Mode	Serves to synchronisation and grouping of several modules to one ventilation system.
Object 26 in configuration .../Master	
26 : Output, Master/Slave Mode	Serves to synchronisation and grouping of several modules to one ventilation system.

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Function Block   System - Objects   (continue)

Object	Description
Object 27 in configuration .../Slave	
27 : Input, Master/Slave Direction	Serves to synchronisation and grouping of several modules to one ventilation system.
Object 27 in configuration .../Master	
27 : Output, Master/Slave Direction	Serves to synchronisation and grouping of several modules to one ventilation system.
28 : Output, Filter Change Request	One of the fan pairs has reached the maxiumum runtime without filter changing. This signal will be reset on object 28 via an acknowledgement.
29 : Input, Filter Change Acknowledge	After filter change acknowledge it here, to reset the signal on object 27.
30 : IO, Timeout Control	Every action which is conected to a runtime, is writing her runtime on this object. Writing on this object leads to change this runtime parameter in this action. The change of the runtime has to finished inbetween 60 seconds. If the time has expired you need to chose the desired operation again.

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2.6 Function Block   Exhaust Air

This functional block is only active, if a configuration with exhaust air option is choosed.

Function Block   Exhaust   -   Parameter

Parameter	Settings	Description
Lead Time	0 seconds unntil 5 minutes	If the input is active the pair 2 goes after the preset runtime into exhaust air mode, object 22 will be switched active.
Lag Time [min]	0 - 60	If the follow-up time is passed the fan pir 2 goes to the basic ventilation mode.
Exhaust Fan Type	Silvento FK Ra15-60 ACM-Modul Custom 0-12V	The Silvento FK, Ra15-60 and the ACM-Modul with voltage control have fixed fan stages. For other fans you need an caracteristic curve. (see next page)

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Function Block   Exhaust   -   Parameter   (continue)

Parameter	Settings	Description
Basic Flow [m³/h]		Volume Flow of pair 2 in basic ventilation
Silvento FK	Automatic OFF 30 - 60 m³/h	Possible Settings for *Silvento FK*
Ra15-60	OFF 15 - 60 m³/h	Possible Settings for *Ra15-60*
ACM-Modul	Automatic OFF Stage 1 - 3	Possible Settings for *ACM-Modul*
User-defined 0..12V	5 - 100 m³/h	Adjustment range for other *ventilation types*
Active Flow [m³/h]		Volume flow of pair 2 in evaporation
Silvento FK	Automatic OFF 30 - 60 m³/h	Possible Settings for *Silvento FK*
Ra15-60	OFF 15 - 60 m³/h	Possible Settings for *Ra15-60*
ACM-Modul	Automatic OFF Stage 1 - 3	Possible Settings for *ACM-Modul*
User-defined 0..12V	5 - 100 m³/h	Adjustment range for other *ventilation types*
Fan Characteristic Is only necessary , by using of an external air vent/damper control with voltage input. (Parameter: *exhausted air type = User-defined 0-12V*) stage 1 / 2 / 3		
Flow [m³/h]	5 - 100	fan stage settings (1, 2 and 3)
Exhaust [mV]	0 - 10000	fan stage settings (1, 2 and 3)
Interval periode --- Active time	Static 1 min -- 5 min 2 min -- 5 min 1 min -- 15 min 2 min -- 15 min 5 min -- 15 min 1 min -- 30 min 2 min -- 30 min 5 min -- 30 min 10 min -- 30 min	

Function Block   Exhaust - Objects

Object	Description
19 : input, exhaust air demand	Switch input for using pair 2 as exhaust air device
20 : input, basic ventilation active	Switch input to deactivate basic ventilation

21 : Input, Air Request E^2
   resp.
21 : Input, Air Request EGO
 	
   (if exhaust/supply air request is active)
	Enables the switch of the choosed ventilation pairs into exhaust air mode /incoming air mode (without delay).

22 : input, requirement of incoming air	Switch output to switch external fan in incoming air mode

2.7 Function Block Dry Contacts (Push button)

This functional Block is only active, if dry contacts are activated.

Push Button

Function Block Dry Contacts (push button) - Parameter

Parameter	Settings	Description
Time Settings		
Double Press	0 - 2 seconds	In between this time the two pushs will be interpret as an double impulse and will be assigned to other functions. (A single impulse can only be registered after this time has finished. If this time is choosen very long an annoying delay could be, when this time is choosen to long.)
Long Press	0 - 2 seconds	After that time the push button will be recognize as a prolonged actuation and can be allocated to other functions.
Pushbutton Settings		
Short Function	None Speed Up/Down OFF Night Intense Ventilation Exhaust Request	This function is used by push button with short press. Standard value: Speed Up/Down
Timeout [min]	0 - 240	Runtime for short function

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Function Block   Dry Contacts (push button) - Parameter   (continue)

Parameter	Settings	Description
Long Function	None Speed Up/Down OFF Night Intense Ventilation Exhaust Request	This function will be execute by long press. Standard value: OFF
Timeout [min]	0 - 240	Runtime for long function
Double Function	None Speed Up/Down OFF Night Intense Ventilation Exhaust Request	This function will be execute bei double press. Standard value: Intense Ventilation
Timeout [min]	0 - 240	Runtime for double function
Debounce Time [ms]	2 - 100	Depending on the choosed push button/switch longer debouncing times could be necessary, if mistaken double pushs are notified.

Function Block   Dry Contacts (push button) - Objects

Object	Description
23 : Output, Short Pressed	Switch output 0/1 **short** press by push putton
24 : Output, Long Pressed	Switch output 0/1 **long** press by push putton

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Switch

Device: 1.1.1 KNX-LUNOS-Control4

	Switch Settings
Configuration	
Lead Temperature	Function Switch 2 [OFF] Fan Stage 1
Lead Humidity	
Lead CO2	Function Switch 2 [ON] Fan Stage 3
Dry Contacts (Switch)	
Fan	
System	Debounce Time [ms] 10
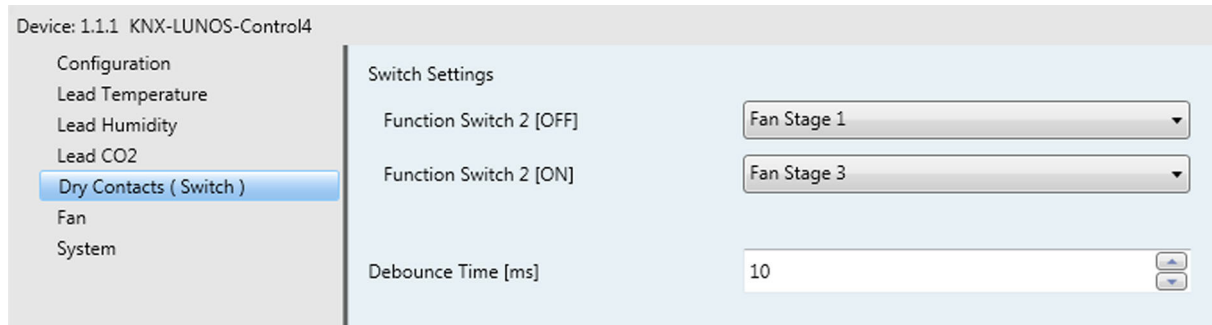
Function Block Dry Contacts (switch) - Parameter

Parameter	Settings	Description
Switch Settings With switch 1 choose manual or automatic mode. If manual mode is choosed the fan stage is selected via switch as follow.		
Function Switch 2 [OFF]	Off Fan Stage 1 Fan Stage 2 Fan Stage 3	Switch positon [OFF] the selected fan stage is switched on
Function Switch 2 [ON]	Off Fan Stage 1 Fan Stage 2 Fan Stage 3	Switch positon [ON] the selected fan stage is switched on.
Debounce Time [ms]	2 - 100	Depends on the selected switch

Function Block Dry Contacts (switch) - Objects

Object	Description
23 : Output, Switch 1	Status switch 1, for furhter evaluations.
24 : Output, Switch 2	Status switch 2, for furhter evaluations.

2.8 Function Block   Temperature Controlling

This funtional block is only active, if temperature controlis activated.

The dynamic cycle is only active in expert mode.

Function Block   Temperature Control   -   Parameter

Parameter	Settings	Description
Protection [°C]	5 - 16	Shortfall of the inside temperature the ventilation is completly switched off to prevent winter temperatures and frost damages.
Lock Control Behaviour	Slave Master	Beahvior of the objects "temperature control active" Slave: the object is input and is locked with a 0 Master: the object is output and is locking the heating/cooling

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Function Block   Temperature Control   -   Parameter   (continue)

Parameter	Settings	Description
Difference [°C]	0 - 10	If the difference between the Ouside and inside temparture is greater then this temperature difference the control tries to reach the desired temperature with switch over between summer- and recovery heat mode. This supports as well the heating and cooling systems in the transition period.A great distance prevent conflicts with the regulation of the heat/cooling circuit.
Dynamic Cycle Time (depending on Outside temperature)	No Pairs Pair 1 Pair 2 Both Pairs	Only in expert mode The reversing time is only controled by the outside temperature
Temperature Settings	**only if „dynamic cycle time" NOT by „No Pairs"**	
Minimum [°C]	-10 .. 20	If the outside temperature is below the minimum temperature the minimum cycle time is used. If the outside temperature is above the maximum temperature the maximum cycle time is used..
Maximum [°C]	-10 .. 20	If the temperature is between the minimum and maximum temperature the cycle time will be interpolated linearly.
Cycle Time	**only if „dynamic cycle time" NOT by „No Pairs"**	
Stage 1 / 2 / 3		
Minimum	40 seconds up to 2 hours	minimum cycle time for fan stage 1 / 2 / 3
Maximum	40 seconds up to 2 hours	maximum cycle time for fan stage 1 / 2 / 3

Function Block   Temperature Control   -   Objects

Object	Description
10 : Input, Temperature Inside	input for inside temperature measured value of an other KNX-device.
11 : Input, Temperature Outside	input for outside temperature measured value of an other KNX-device.
12 : Input, Temperature Setpoint	Input for desired temperature value of an other KNX-device, normaly connected with the desired value of the heating actuator.
13 : Input, Lead Temperature Enable	The tracking of the fan stage through the temperature can be deactivated by "0"

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2.9 Function Block   Humidity Control

This funtional block is only active, when hunidity control is activated.

Function Block   Humidity Control   -   Parameter

Parameter	Settings	Description
R. Humidity Thresholds		
TH 1 / 2 / 3 / 4 [%]	0 - 90	By overstepping the switching point X the fan stage (X-1) is switched on, as long as these stage or a higher is not activated.To switch off the next lower stage must be undershoot. If the outside humidity is available the tracking will be deactivated as soon as the absolute outsidehumidity is higher then the absolute inside humidity.
Abs. Humidity -- Humidity Removal		
Minimum Gap (*0.1) [g/kg] (Outside / Inside)	0 - 20	In the function cellar drying the ventialtion should be deactivated, if the outside humidity is at least for minimum near by the selected distance between the absolute humidity.

Function Block   Humidity Control   -   Objects

Object	Description
14 : Input, Humidity Inside	Input for inside humidity value of an other KNX-device.
15 : Input, Humidity Outside	Input für Outside humidity value of an other KNX-device.
16 : Input, Lead Humidity Enable	The tracking of the fan stage through the humidity can be deactivated by "0"

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2.10 Function Block CO2 Control

This funtional block is only active, if CO2 Control is activated.

Device: 1.1.1 KNX-LUNOS-Control4

Configuration	CO2 Thresholds
Lead Temperature	
Lead Humidity	TH 1 — 800 ppm
Lead CO2	TH 2 — 1000 ppm
Dry Contacts (Switch)	TH 3 — 1500 ppm
Fan	TH 4 — 2000 ppm
System	

Function Block CO2 Control - parameter

Parameter	Settings	Description
TH 1 / 2 / 3 / 4	700 .. 4000 ppm	By overstepping the switching point X the fan stage (X-1) is switched off, as long as these stage or a higher is activated.To switch off the next lower stage must be undershoot.

Function Block CO2 Control - Objects

Object	Description
17 : Input, CO2 Inside	Input for CO2 (air quality) of an other KNX-device.
18 : Input, Lead CO2 Enable	The tracking of the fan stage through the CO2-concentration can be deactivated by "0".

Limit value for fan stages by CO2-contral and humidity control

The circuitry of the 3 fan stages is taken place via 4 limit values. After reaching the limit value 2 the fan stage 1 will be activated. To deactivate the limit value 1 has to be undershoot. The same holds true for the higher fan stages if these or a higher stage are activated, the exeeding of an other limit value has no impact.

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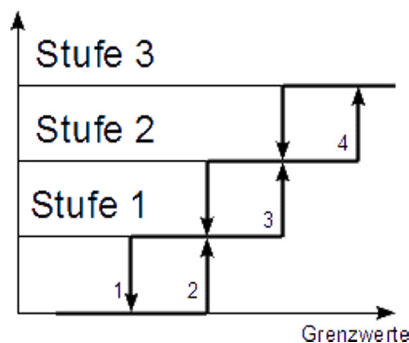
2.11 Priorities of the used Objects

The objects that influence the fan control have an order in which they are weighted.

- **A)** **System lock (Object-25)**
- **B)** **Incoming air/exhaust air requirement (Object-21) if incoming air/exhaust air requirement is activated**
- **C)** **Slave-mode (Object-26) in slave-mode**
- **D)** **Fan stage-manual mode (Object-7) ***
- **E)** **Fan stage is calculating by control of the HVAC-operating mode**
- **F)** **HVAC-Operation mode 1 (Object-3) ***
- **G)** **HVAC-Operation mode 2 (Object-4) ***
- **H)** **HVAC-Operation mode 3 (Object-5) ***
- **I)** **HVAC-Night mode (Object-2) ***
- **J)** **HVAC-Manual mode (Object-1) ***
- **K)** **HVAC-Automatic mode (Object-0)**

By change of the * marked objects the objects with higher priority they will be reset to get by each user action a reaction of the system, except in the states A)-C), which have every time priority.

Operating Examples:

By the following operating sequence:

    HVAC-Automatic -> HVAC-Night Mode -> HVAC-Operation Mode1

first the HVAC-Operation Mode1 is active, after reset (or timeout) the operation mode 1,the HVAC-Night mode is again activated.

In sequence:

    HVAC-Automatic -> HVAC-Operation Mode1 -> HVAC-Night Mode

if the night mode is resetting the operation mode 1, after reset the night mode the control changes into the HVAC-Automatic mode.

Master-Slave-Mode:

A control device which is operating in master mode can control several devices in slave mode. The exchange of the direction an fan stage information takes place via the object-26 IO Master/Slave. If the fan is running in incoming air mode, located in plug-in location A in the master module, A is operating also in the slave module in the incoming air mode.
If in each module is only one fan conected, it must be one conected to conection A and one at conection B. It is necessary to look at the balance between incomin air and exhausted air devices (same number of plug-ins A and plug-ins B), otherwise the necessary air exchange and the wished heating recovery can not be exceeded.

Filter Change Indication:

Depending on the speed of the fan, the cleaning or the change of the filter is necessary periodical. After reaching the intended runtime a signal will be indicated at object-27 (filter change).This can be acknowledged with „OFF" on Object-27, comes again after 24 hours. This is a reminder function. After filter change the signal can be reset on object-28 (filter change acknowledge), after that the runtime counting starts from the beginning.

3 Product Page

The KNX-Modul **KNX-LUNOS-CONTROL4-IW** allows the control of the decentral ventilation devices with heating recovery of the company Lunos. (www.lunos.de) e^2 uand e^{go} via the KNX-Bus. Up to 4 ventialtion devices can be controled by one module.Several modules can be connected via the KNX-Bus to adjust them among each other. A direct control of the ventilation devices can be controled by existing push putton / switch.

This device has an integrated KNX-buscoupling unit and does not need auxilary voltage. (*look at technical data*).

The KNX-Modul **KNX-LUNOS-CONTROL4-IW** is colocated in a plastic housing which exactly fits into a standard in-wall mounting box
(without any fixing material).
To cover the in-wall mounting box a standord cover ca be used..
It can be used a push button/ switch of the described functions.
(attention of the installation depth).

This protection class corresponds to IP20

Article No.: 65001001

KNX-LUNOS-CONTROL4-IW

IP20

The modul shall be never conected under any circumstances to line voltage.
It is not allowed to pass line voiltage through the used in-wall mounting box.
lThese devices must be installed by authorized qualified personnel only.

technical data   and installing manual

Lunos Hybrid ventilation system with e^2 and AB 30/60

www.lunos.de/?page_id=170

Article No.:

Lunos Hybrid Ventilation System
with e^2 and AB 30/60
IP20

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Arcus-EDS GmbH   Rigaer Str. 88 , 10247 Berlin   Tel.:   +49 / (0)30 / 2593 3914
www.arcus-eds.de   sales@arcus-eds.de   Fax.: +49 / (0)30 / 2593 3915   e11
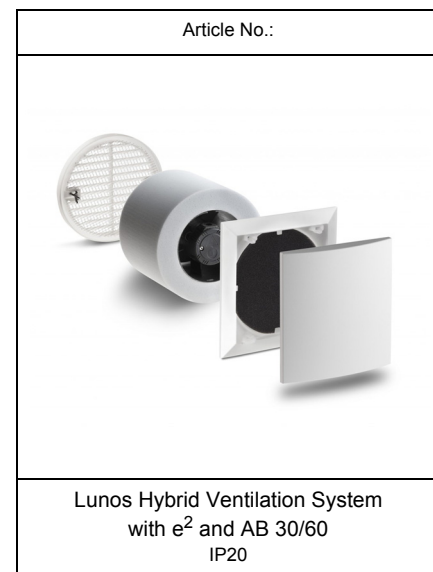
4 Technical Data

Technical Data   -   KNX-LUNOS-CONTROL4-IW

Operating Voltage	KNX bus voltage 21 .. 32VDC
Power Consumption (KNX)	aprox. 120mW (by 24VDC)
Connection Bus Voltage	KNX-2-pol terminal (red / black)
Auxiliary Voltage	24V .. 32VDC 18W max. (5W / 10W / 15W / 18W by 1..4 fans)
Connection Auxiliary Voltage	WAGO-terminal block (yellow / white)
Elektrischer Wirkungsgrad Modul	92% (by maximum power)
Binary Input Push Button / Switch	3mA floating / debounced
Buscoupling Unit	Integratedt
Ambient Temperature	Storage -20 .. +85°C Operation -5 .. +45°C
Humidity	until 90% not condensing
Power Reduction	automatical over 75°C modul temperature
Commissioning with the ETS	**Arcus_Lunos_Ex_v4.vd4**
Protection Class	IP20
Installation KNX-Modul	standard in-wall mounting (60/68) mm
Housing KNX-Modul	plastic black
Dimensions KNX-Modul	(50 x 50 x 20) mm (B x H x T) 58mm diagonal
Article Number	65001001
Hybrid Ventilation System with e^2 and AB 30/60	look at: www.lunos.de/?page_id=170

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Arcus-EDS GmbH   Rigaer Str. 88 , 10247 Berlin   Tel.:   +49 / (0)30 / 2593 3914
www.arcus-eds.de   sales@arcus-eds.de   Fax.:   +49 / (0)30 / 2593 3915   e11

Domestic Ventilation with Heat Recovery

Product Page
KNX-LUNOS-CONTROL4-IW

arcus-eds | KNX

HVAC
Lunos

5 Commissioning

The commissioning of the KNX-Modul **KNX-LUNOS-CONTROL4-IW** takes place with the ETS (KNX Tool Software) in connection with the associated aplication programm. The delivery takes place in the unprogrammed status.All functions are programmable and parametriizesable with the ETS. Please note the associated documentation to the ETS.

The KNX-terminal has to conect with the supplied terminal block (red (+) / black (GND)) conected with the KNX Bus.
The auxiliary voltage must be connected with the supplied terminal block (yellow (+) / white (GND)). The fans has to be connected according to the Lunos-Specification mounted and conected with the preassembled connectors. Optional dry contact Push buttons/switches can be connected with the preassembled connectors.

The modul shall be never conected under any circumstances to line voltage.
It is not allowed to pass line voiltage through the used in-wall mounting box.
These devices must be installed by authorized qualified personnel only.
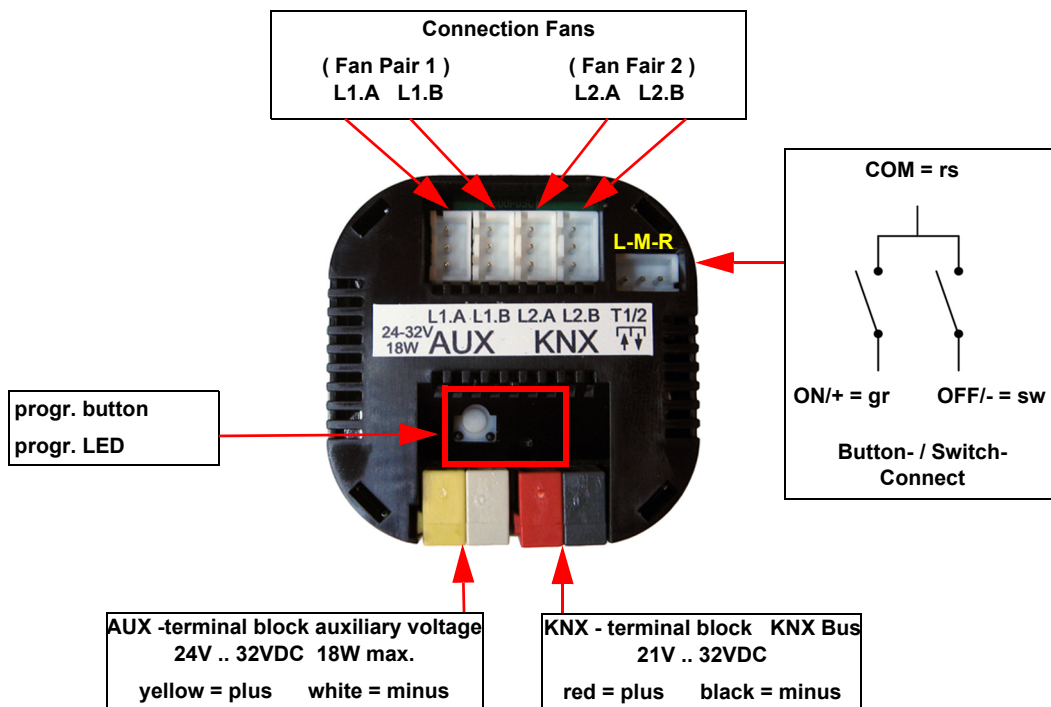
The preassembled connectors must be connected with the cables of the fans as follow:

preassembled connector		Fan Conection	ACM-Modul Conection
	violet	violet	0-10V
	red	red	+
	blue	blue	GND

overview of different connection possibilities of the LUNS fan types

LUNOS Fan Type	L1.A	L1.B	L2.A	L2.B	
e²	X	X	X	X	Paarweise
e^{go} S1[R]	X		X		
e^{go} S2[L]		X		X	
Silvento			X	X	
RA 15-60			X	X	
ACM-Modul			X	X	

You must take care that the e²-devices in one installation system every time has to be connected the same number of   Exhausted(A)- and incoming fans(B).

Connection Fans

(Fan Pair 1)
L1.A   L1.B

(Fan Fair 2)
L2.A   L2.B

L-M-R

COM = rs

ON/+ = gr   **OFF/- = sw**

Button- / Switch-Connect

progr. button

progr. LED

L1.A L1.B L2.A L2.B T1/2
24-32V 18W
AUX   KNX

AUX -terminal block auxiliary voltage
24V .. 32VDC 18W max.

yellow = plus   white = minus

KNX - terminal block   KNX Bus
21V .. 32VDC

red = plus   black = minus

KNX-LUNOS-CONTROL4-IW   Assembly View

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Arcus-EDS GmbH
www.arcus-eds.de

Rigaer Str. 88 , 10247 Berlin
sales@arcus-eds.de

Tel.:   +49 / (0)30 / 2593 3914
Fax.:   +49 / (0)30 / 2593 3915

e11

In Case of Bus Voltage Recurrence

All changes made using the help key for the KNX bus are saved if the device has been correctly parameterized.
The controller and outputs start with their current values and the ETS parameter settings are saved.

Discharge Program and Reset Sensor

In order to delete the programming (projecting) and to reset the module back to delivery status, it must be switched to zero potential (disconnect the auxiliary supply).
Press and hold the programming button while reconnecting the auxiliary supply and wait until the programming LED
lights up (approx. 5-10 seconds).
Now you can release the programming button.
The module is ready for renewed projecting.
If you release the programming button too early, repeat the aforementioned procedure.

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Arcus-EDS GmbH   Rigaer Str. 88 , 10247 Berlin   Tel.:   +49 / (0)30 / 2593 3914
www.arcus-eds.de   sales@arcus-eds.de   Fax.: +49 / (0)30 / 2593 3915   e11

Imprint

Editor: Arcus-EDS GmbH, Rigaer Str. 88, 10247 Berlin
Responsible for the contents: Hjalmar Hevers, Reinhard Pegelow
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Safety Regulations

Attention! Installation and mounting must be carried out by a qualified electrician.
The buyer/operator of the facility has to make sure that all relevant safety regulations, issued by VDE, TÜV and the responsible energy suppliers are respected. There is no warranty for defects and damages caused by improper use of the devices or by non-compliance with the operating manuals.

Warranty

We take over guarantees as required by law.
Please contact us if malfunctions occur. In this case, please send the device including a description of the error to the company's address named below.

Manufacturer

Registered Trademarks

The CE trademark is a curb market sign that exclusively directs to autorities and does not include any assurance of product properties.

Registered trademark of the Konnex Association

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Arcus-EDS GmbH
www.arcus-eds.de

Rigaer Str. 88 , 10247 Berlin
sales@arcus-eds.de

Tel.: +49 / (0)30 / 2593 3914
Fax.: +49 / (0)30 / 2593 3915