CONTROL YOUR LIVING SPACE

Application manual

Modbus - KNX interface for RDZ air handling units

EK-BO1-TP-RMA

Index

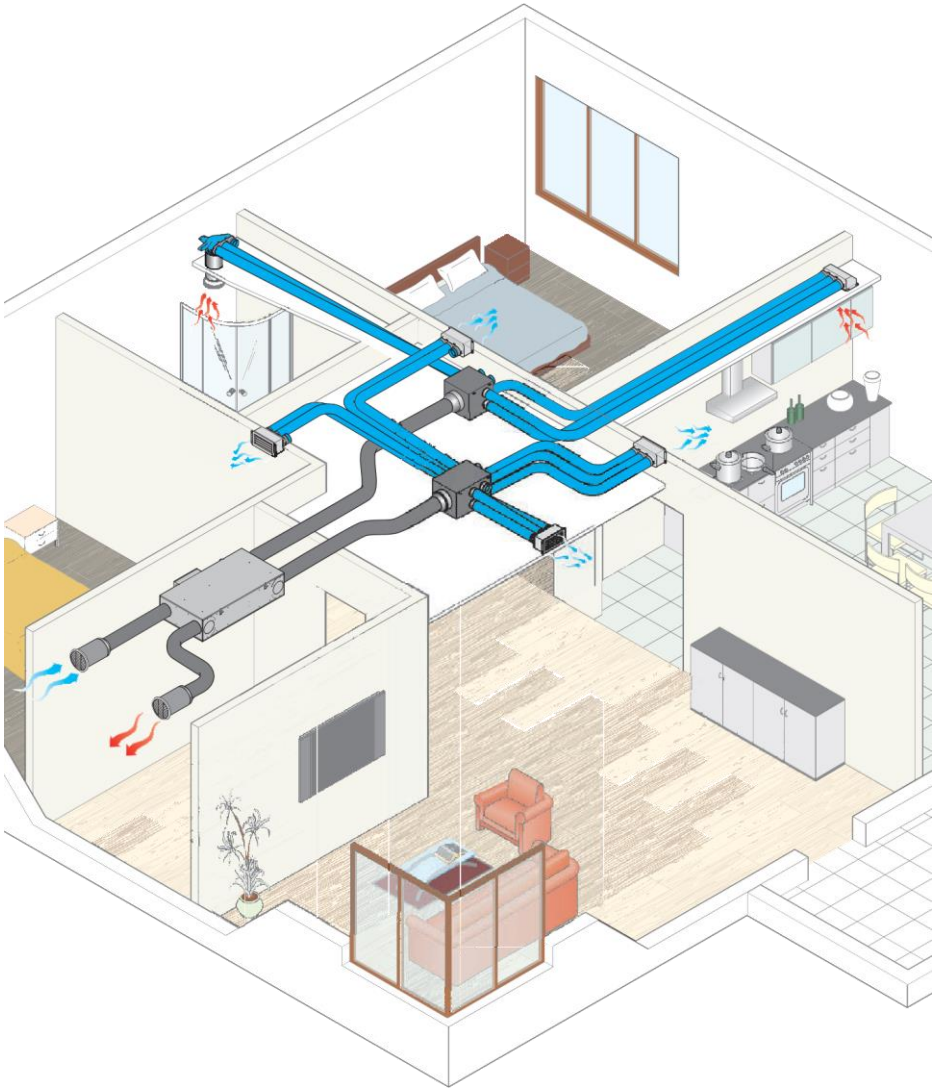
1 Revision index

Release	Changes	Author	Date
1.0	-	R. Rocco	30/08/2021
2.0	Corrected table of supported units and added configuration with dip-switch	G. Schiochet	21/06/2023

2 Application area

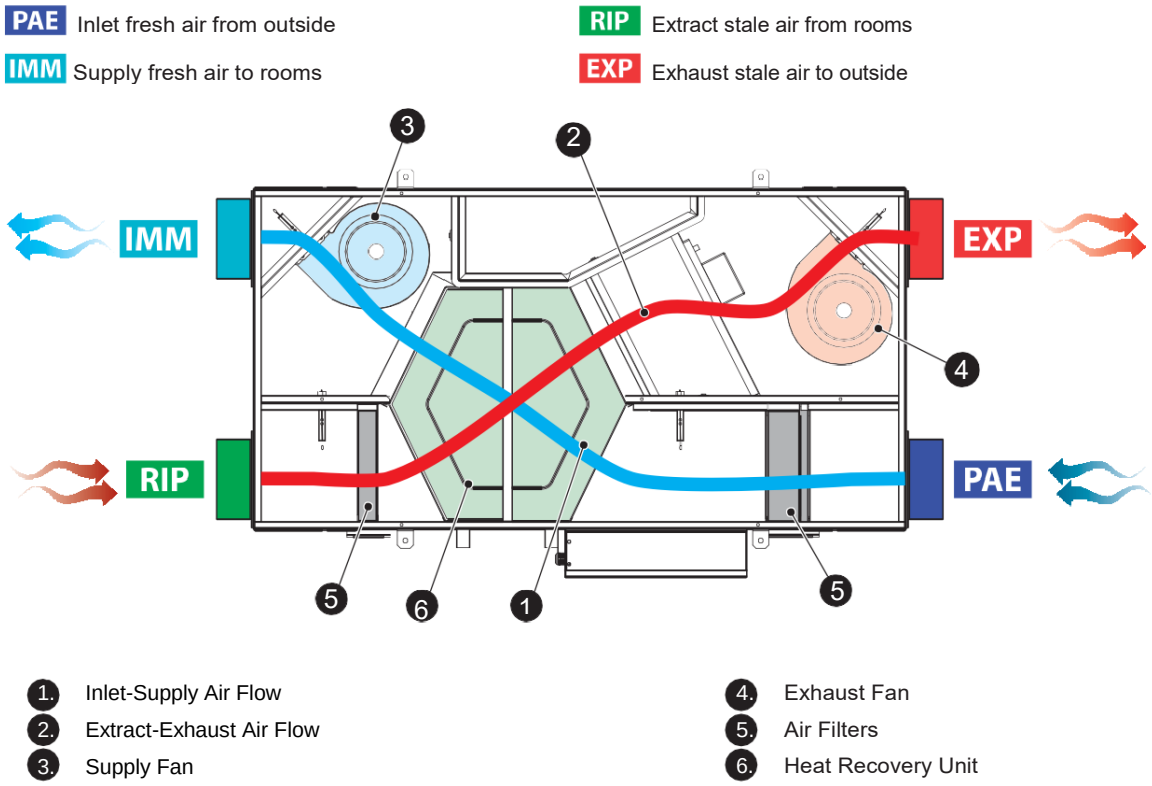
An increasing number of single-family residential buildings or condominiums, whether new or subject to major renovation, are equipped with high-efficiency air renewal systems with heat recovery to maintain high indoor air quality and reduce the waste of heating energy that occurs when rooms are ventilated by manually opening doors and windows.

In addition to simple air renewal, dehumidification functions can also be added for the treatment of latent heat loads and integration functions for the treatment of sensible heat loads. Dehumidification is particularly important when radiant panel systems are also used for summer cooling, as it allows the humidity in the rooms to be controlled stably, guaranteeing optimum system performance and maximum well-being and comfort for the occupants.



Air renewal system with centralised ventilation unit (image: RDZ)

The system generally consists of a centralised unit that introduces filtered external air into the rooms and constantly extracts the stale air, recovering the heat before the air is expelled outside the building and using it to heat the incoming air to the right temperature. The air is introduced and extracted by means of a system consisting of ducts, distribution plenums and supply and return air vents installed in the rooms. The operating logic for air treatment by the centralised unit is taken over by the on-board electronics.



Flow diagram for centralised air renewal unit with energy recovery (image: RDZ)

In order to achieve the objectives of high air quality and low energy consumption at the same time, it is advisable to put the air handling unit and the Ekinex KNX building automation system into communication via the Modbus / KNX interface (order code EK-BO1-TP-RMA). This allows control of the unit operating modes (such as renewal, boost or economy) using one or more of the possibilities made available by the Ekinex KNX building automation system:

- timer or supervision programmes;
- sensors measuring environmental parameters;
- manual controls.

Environmental parameters include, for example, the measurement of room temperature, relative humidity and air quality (such as CO2 or TVOC concentration). But other signals detected by KNX devices can also be used to optimise the operation of the air renewal system, such as the presence/absence of people or the opening of doors and windows.

3 Product description

3.1 Use and function

The EK-BO1-TP-RMA interface is used in KNX standard home and building automation systems where it works as a gateway (protocol conversion) between an RS485 serial network with Modbus RTU (Remote Terminal Unit) protocol and a KNX TP network.

The device is dedicated to interfacing the electronic control board located on the RDZ air handling units by means of the Modbus RTU RS485 communication port. On the Modbus network the interface has the function of Master device, while the control board represents the Slave device.

The information exchanged on the Modbus network is updated on the KNX network using TP (twisted pair) transmission media. The interface handles a bidirectional data flow: Modbus registers can be read cyclically and their value can be sent as a communication object on the KNX TP network. The data update on the KNX network can be cyclical and/or on a change event of the data acquired from the Modbus network. On a change event of the communication objects, the data is written to the Modbus registers of the machine control card.

The configuration of the interface is done via the ETS application program. The choice of the RDZ air handling unit to be connected is made in the application program which exposes the KNX communication objects relevant to that machine.

3.2 Models

Only one device model is available. The device is designed for panel mounting on 35 mm rails according to the EN 60715 standard. The programming pushbutton and LED are located on the front of the device. The lower part of the housing houses the bus connection terminal, the upper part the Modbus RTU network connection terminal.

3.3 Main features

- Plastic housing
- Design for mounting on 35 mm rail (according to EN 60715)
- Degree of protection IP20 (according to EN 60529)
- Safety class II
- Weight 70 g
- Modular device with large 2 M.U. (1 Modular Unit = 18 mm)
- Dimensions 36 x 94 x 71 mm (L x H x P)

3.4 Technical data

Power supply

- 30 Vdc through KNX bus
- Current consumption (from bus line): < 13 mA

Environmental conditions

- Operating temperature: - 5 ... + 45°C
- Storage temperature: - 20 ... + 60°C
- Transportation temperature: - 20 ... + 60°C
- Relative humidity: 5 - 95% not condensing

3.5 Control and display elements

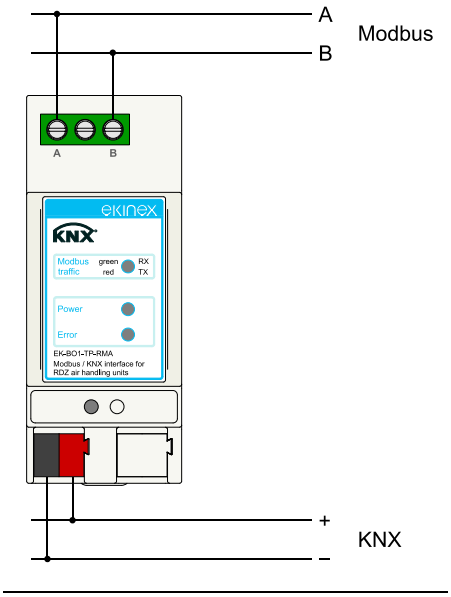
The device is equipped with:

- KNX programming pushbutton and LED
- LED for status indication

3.6 Connections

For connection, the device is equipped with:

- terminal block (black / red) for connecting the KNX bus line
- screw terminal block (A, B) for connection of the RS-485 serial line



3.7 Supported RDZ units

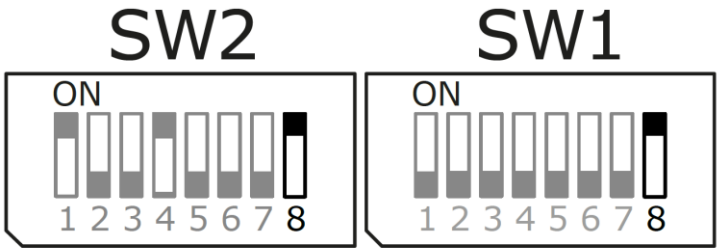
The Modbus - KNX interface for air handling units was developed in collaboration by Ekinex S.p.A. and RDZ S.p.A. Since 1978 RDZ is the leading company in Italy on the heating and cooling market of radiant systems. Its daily task is to improve indoor comfort in residential, commercial and industrial buildings, both for new constructions and for renovation projects. The company has been always using innovative materials to reach high quality standards and has been always focusing on developing solutions which can meet even the most demanding requirements.

The RDZ air handling units supported by the EK-BO1-TP-RMA interface are shown in the following table.

Model	Product name	Set	Functionality	Description
B	REFLAIR	(*)	Mechanical ventilation with heat recovery	RDZ horizontal mechanical ventilation units for false ceiling mounting with high efficiency heat recovery unit (~90%)
B	CHR …			RDZ horizontal mechanical ventilation units for false ceiling mounting with high efficiency heat recovery unit (~90%)
F	WHR150 WHR250 WHR400			RDZ vertical mechanical ventilation units for wall or floor mounting with high efficiency heat recovery unit (~90%)
A	UAP 201-PDC	(**)	Air renewal with dehumidification	RDZ unit for ambient air renewal with high-efficiency heat recovery (~90%) and dehumidification with possibility of summer and winter heat pump integration
C	UC 300 V			RDZ unit for room air renewal with high efficiency heat recovery (~90%) and summer dehumidification
D	UC 360 V			
E	UC 360 MHE UC 500 MHE UC 500 MVHE			

Settings

- (*) DIP-SWITCH SETTING
  For: REFLAIR 150-250, CHR 400 Core, WHR 150, set DIP 8 (SW1 and SW2) to ON position.



- (**) STOP BIT VALUE SET
  For: UC 300 V2, UC 360 V1, set STOP BIT VALUE to 1.

Please see Technical Menu/Communication Parameters:

UC 300 V2: http://pf.rdz.it/?pr=93
UC 360 V1: http://pf.rdz.it/?pr=96

More information on RDZ air handling, ventilation and dehumidification systems can be found in the corresponding catalogue or in the technical and installation manuals available for download at www.rdz.it/en

3.8 Influence of control on energy consumption

The control mode of the ventilation unit influences through the CTRL coefficient the specific energy consumption (SEC), as defined in the EU Regulation 1253 / 2014.

$$SEC = t_a \cdot pef \cdot q_{net} \cdot MISC \cdot CTRL^x \cdot SPI - t_h \cdot \Delta T_h \cdot \eta_h^{-1} \cdot c_{air} \cdot \left(q_{ref} - q_{net} \cdot CTRL \cdot MISC \cdot (1 - \eta_t)\right) + Q_{defr}$$

Specific energy consumption (SEC), expressed in $kWh/(m^2 \cdot year)$, represents the coefficient expressing the energy consumed to ventilate one m^2 of heated living space in a dwelling or building, calculated in accordance with Annex VIII of EU Regulation 1253 / 2014.

The control factor CTRL reduces its value from a simple manual control to a more powerful local environmental control, as shown in the following table. The reduction of the CTRL factor results in a reduction of the SEC and a better energy classification of the ventilation unit. Environmentally controlled ventilation, also known as DCV (Demand Controlled Ventilation), constantly adjusts the ventilation air flow rate according to the actual need. In this way, DCV control offers a clear advantage over Constant Air Volume (CAV) systems. Due to the reduction of the average air flow rate, less energy is required for the operation of the fan unit and for the handling of the air to be introduced into the building, which can include the stages of heating, cooling and/or dehumidifying.

Control type	Definition	Control factor CTRL
Manual control (without DCV)	Any control type that does not use demand control	1
Clock control (without DCV)	A clocked (daytime-controlled) human interface to control the fan speed/flow rate of the ventilation unit, with at least seven weekday manual settings of the adjustable flow rate for at least two setback periods, i.e. periods in which a reduced or no flow rate applies	0,95
Central demand control	A demand control of a ducted ventilation unit that continuously regulates the fan speed(s) and flow rate based on one sensor for the whole ventilated building or part of the building at central level	0,85
Local demand control	A demand control for a ventilation unit that continuously regulates the fan speed(s) and flow rates based on more than one sensor for a ducted ventilation unit or one sensor for a non-ducted unit	0,65

Source: EU Regulation 1253/2014

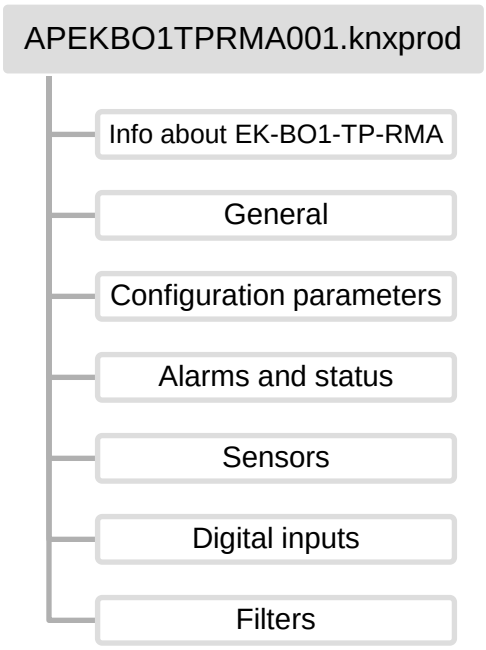
Note. RDZ ventilation units supported by the EK-BO1-TP-RMA interface are to be considered ducted units according to EU Reg. 1253/2014, i.e. "ventilation unit intended to ventilate one or more rooms or enclosed space in a building through the use of air ducts, intended to be equipped with duct connections".

“Environmental control” means a device (or a set of integrated or separate devices), which measures a control parameter and uses the measured values to automatically adjust the flow rate of the ventilation unit. The control parameter is a measurable parameter or a set of measurable parameters deemed to be representative of the actual ventilation requirement. Control parameters are, for example, relative humidity, carbon dioxide (CO2), volatile organic compounds (VOC) or other gases, presence, movement or dwell detection based on body heat detected by infrared sensors, electrical signals due to human intervention in lighting or other machinery.

4 ETS application software

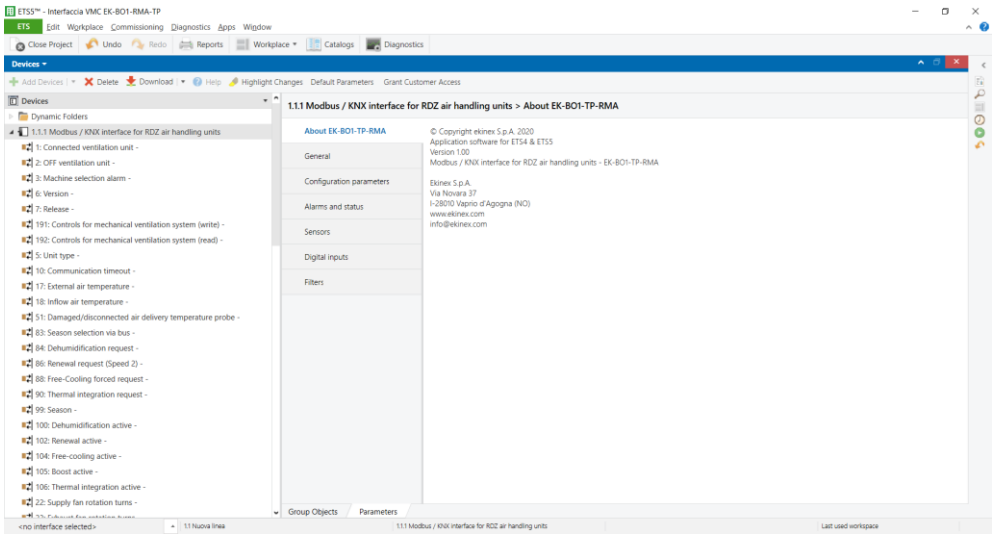
4.1 Application software tree

Depending on the ventilation units, the application software tree may include the following items:



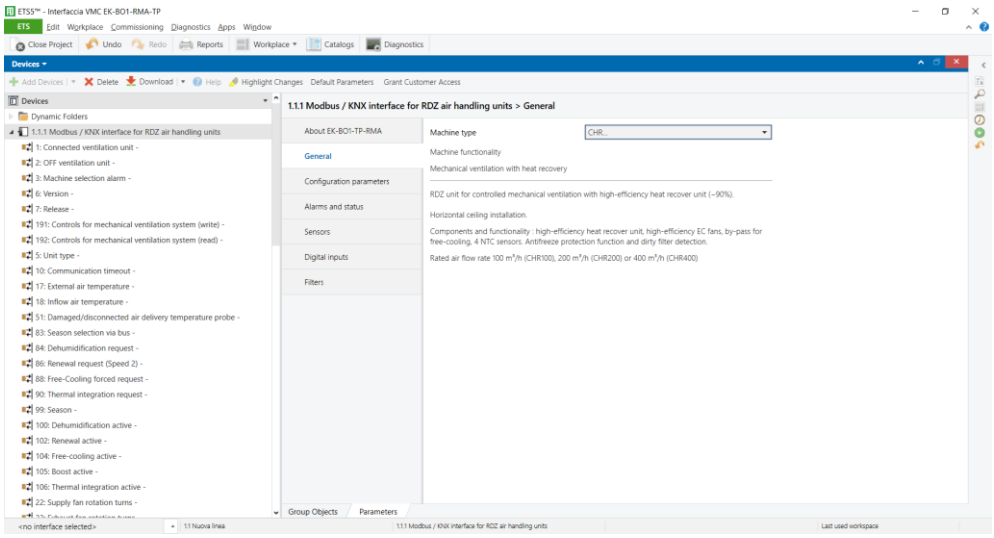
4.2 Info about EK-BO1-TP-RMA

The folder ***Info about EK-BO1-TP-RMA*** is for information purposes only and does not contain any parameters to be set.



4.3 General

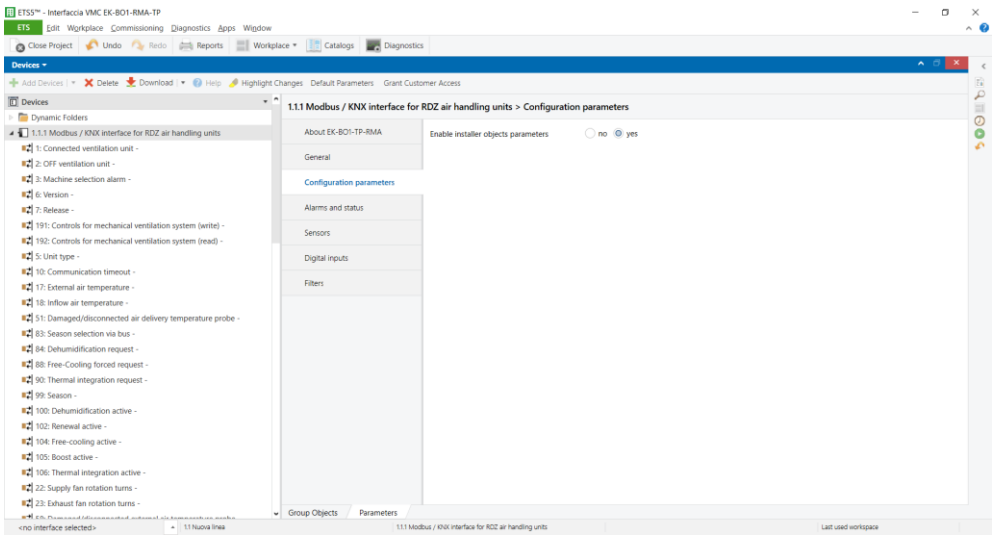
The folder ***General*** allows you to choose the RDZ air handling unit to be interfaced with the "Machine type" parameter. A short text shows the main characteristics of the unit and allows you to check that the code to be chosen corresponds to the model indicated by the designer of the heating system. Once the model has been set, all and only the communication objects dedicated to the chosen unit are displayed.



Parameter name	***Conditions***	***Values***
Model	none	**UAP … -PDC** CHR … UC 300 V… UC 360 V… UC 360 MHE UC 500 MHE UC 500 MVHE WHR…
	For more information on RDZ air handling units, please refer to the technical documentation at www.rdz.it/en	

4.4 Configuration parameters

The folder ***Configuration parameters*** enables the enabling of installer parameter objects.



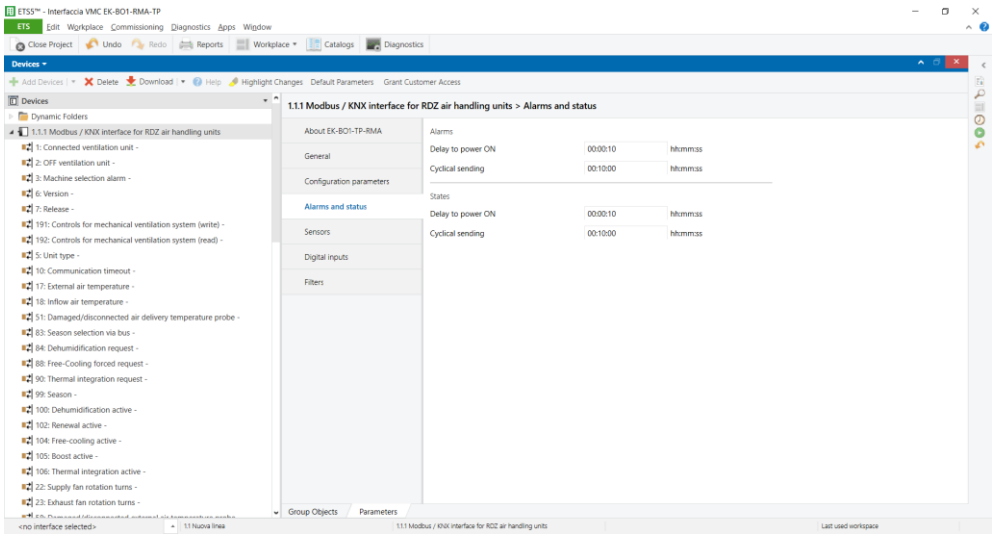
Folder “Configuration parameters” (e.g. CHR unit …)

> **!** The air handling units are conimaged in the RDZ factory on the basis of a project or specific indications from the designer of the heating system. Changing the parameters may affect the correct operation of the ventilation. The operation must only be carried out by qualified personnel trained for this purpose.

Parameter name	***Conditions***	***Values***
Boost deactivation delay	Model = (E)	**0 min** [range 0 min … 99 min]
	The parameter sets the delay with which the boost function is deactivated (corresponding to a temporary increase in the air change rate).	
Enable extended parameters	none	**No** yes
	The parameter makes communication objects available for configuring the operation of the unit with system-specific parameters.	

4.5 Alarms and status

The interface allows alarms and status of the air handling unit to be transmitted on the KNX bus. In the folder ***Alarms and status*** the sending parameters are set. The set of alarms and status available depends on the unit chosen. Alarms and status are exposed as communication objects to be connected via ETS.



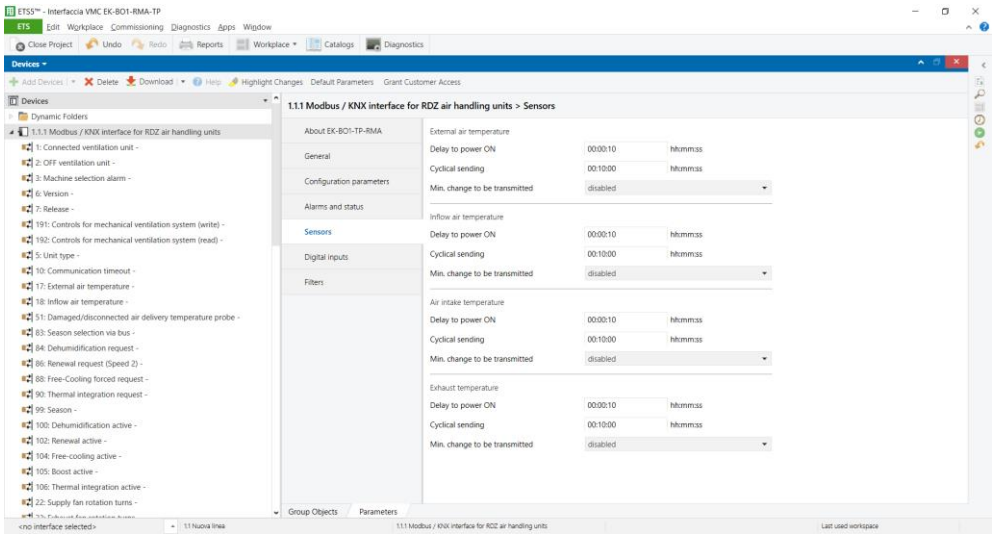
Folder “Alarms and status” (e.g. CHR unit …)

> **!** The visualisation of alarms and status for the end user and/or the system maintenance technician must be carried out on the basis of a project or on the instructions of the heating system designer.

Parameter name	***Conditions***	**Values**
Alarms - delay to power ON		**00:00:10 hh:mm:ss** [range 00:00:00 … 18:12:15]
	The field has the format hh:mm:ss (hours : minutes : seconds): the default value 00:00:10 therefore corresponds to a delay of 10 seconds. The value 00:00:00 means that the value is sent at switch-on without waiting for the delay.	
Alarms - cyclical sending		**00:10:00 hh:mm:ss** [range 00:00:00 … 18:12:15]
	The field has the format hh:mm:ss (hours : minutes : seconds): the default value 00:10:00 therefore corresponds to a cyclical sending of the alarm status of 10 minutes. The value 00:00:00 means that the alarm status is not sent cyclically but only when it changes.	
Status - delay to power ON		**00:00:10 hh:mm:ss** [range 00:00:00 … 18:12:15]
	The field has the format hh:mm:ss (hours : minutes : seconds): the default value 00:00:10 therefore corresponds to a delay of 10 seconds. The value 00:00:00 means that the value is sent at switch-on without waiting for the delay.	
Status - cyclical sending		**00:10:00 hh:mm:ss** [range 00:00:00 … 18:12:15]
	The field has the format hh:mm:ss (hours : minutes : seconds): the default value 00:10:00 therefore corresponds to a cyclical sending of status of 10 minutes. The value 00:00:00 means that the status is not sent cyclically but only when it changes.	

4.6 Sensors

For their operation, air handling units are equipped with a set of sensors connected to the control board. The number of sensors depends on the unit chosen. In the folder ***Sensors*** you set the parameters for sending the values measured by the sensors.



Folder “Sensors” (e.g. CHR unit …)

Parameter name	***Conditions***	**Values**
Water temperature - delay to power ON	All models except (B), (F)	**00:00:10 hh:mm:ss** [range 00:00:00 … 18:12:15]
	The field has the format hh:mm:ss (hours : minutes : seconds): the default value 00:00:10 therefore corresponds to a delay of 10 seconds. The value 00:00:00 means that the value is sent at switch-on without waiting for the delay.	
Water temperature - cyclical sending	All models except (B), (F)	**00:10:00 hh:mm:ss** [range 00:00:00 … 18:12:15]
	The field has the format hh:mm:ss (hours : minutes : seconds): the default value 00:10:00 therefore corresponds to a cyclical sending of the value of 10 minutes. The value 00:00:00 means that the value is not sent cyclically.	
Water temperature - min. change to be transmitted	All models except (B), (F)	**Disabled** 0.5K 1K 2K 5K 10K
Water temperature - delay to power ON	All models except (B), (F)	**00:00:10 hh:mm:ss** [range 00:00:00 … 18:12:15]
	The field has the format hh:mm:ss (hours : minutes : seconds): the default value 00:00:10 therefore corresponds to a delay of 10 seconds. The value 00:00:00 means that the value is sent at switch-on without waiting for the delay.	
Evaporator temperature - cyclical sending	All models except (B), (F)	**00:10:00 hh:mm:ss** [range 00:00:00 … 18:12:15]
	The field has the format hh:mm:ss (hours : minutes : seconds): the default value 00:10:00 therefore corresponds to a cyclical sending of the value of 10 minutes. The value 00:00:00 means that the value is not sent cyclically.	

Parameter name	*Conditions*	Values
Evaporator temperature - min. change to be transmitted	All models except (B), (F)	**Disabled** 0.5K 1K 2K 5K 10K
Condensator temperature - delay to power ON	All models except (B), (F)	**00:00:10 hh:mm:ss** [range 00:00:00 … 18:12:15]
	The field has the format hh:mm:ss (hours : minutes : seconds): the default value 00:00:10 therefore corresponds to a delay of 10 seconds. The value 00:00:00 means that the value is sent at switch-on without waiting for the delay.	
Condensator temperature - cyclical sending	All models except (B), (F)	**00:10:00 hh:mm:ss** [range 00:00:00 … 18:12:15]
	The field has the format hh:mm:ss (hours : minutes : seconds): the default value 00:10:00 therefore corresponds to a cyclical sending of the value of 10 minutes. The value 00:00:00 means that the value is not sent cyclically.	
Condensator temperature - min. change to be transmitted	All models except (B), (F)	**Disabled** 0.5K 1K 2K 5K 10K
External air temperature - delay to power ON		**00:00:10 hh:mm:ss** [range 00:00:00 … 18:12:15]
	The field has the format hh:mm:ss (hours : minutes : seconds): the default value 00:00:10 therefore corresponds to a delay of 10 seconds. The value 00:00:00 means that the value is sent at switch-on without waiting for the delay.	
External air temperature - cyclical sending		**00:10:00 hh:mm:ss** [range 00:00:00 … 18:12:15]
	The field has the format hh:mm:ss (hours : minutes : seconds): the default value 00:10:00 therefore corresponds to a cyclical sending of the value of 10 minutes. The value 00:00:00 means that the value is not sent cyclically.	
External air temperature – min. change to be transmitted		**Disabled** 0.5K 1K 2K 5K 10K
Inflow air temperature - delay to power ON		**00:00:10 hh:mm:ss** [range 00:00:00 … 18:12:15]
	The field has the format hh:mm:ss (hours : minutes : seconds): the default value 00:00:10 therefore corresponds to a delay of 10 seconds. The value 00:00:00 means that the value is sent at switch-on without waiting for the delay.	
Inflow air temperature - cyclical sending		**00:10:00 hh:mm:ss** [range 00:00:00 … 18:12:15]
	The field has the format hh:mm:ss (hours : minutes : seconds): the default value 00:10:00 therefore corresponds to a cyclical sending of the value of 10 minutes. The value 00:00:00 means that the value is not sent cyclically.	
Inflow air temperature – min. change to be transmitted		**Disabled** 0.5K 1K 2K 5K 10K

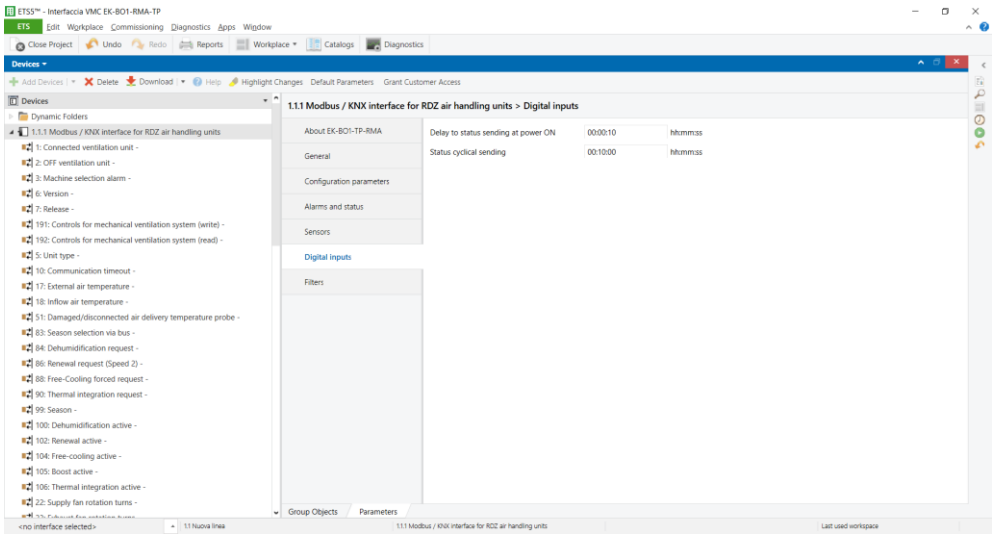
Parameter name	*Conditions*	Values
Air intake temperature - delay to power ON	Model = (B), (D), (F)	**00:00:10 hh:mm:ss** [range 00:00:00 … 18:12:15]
	The field has the format hh:mm:ss (hours : minutes : seconds): the default value 00:00:10 therefore corresponds to a delay of 10 seconds. The value 00:00:00 means that the value is sent at switch-on without waiting for the delay.	
Air intake temperature - cyclical sending	Model = (B), (D), (F)	**00:10:00 hh:mm:ss** [range 00:00:00 … 18:12:15]
	The field has the format hh:mm:ss (hours : minutes : seconds): the default value 00:10:00 therefore corresponds to a cyclical sending of the value of 10 minutes. The value 00:00:00 means that the value is not sent cyclically.	
Air intake temperature – min. change to be transmitted	Model = (B), (D), (F)	**Disabled** 0.5K 1K 2K 5K 10K
Undercooling temperature A - delay to power ON	Model = (E)	**00:00:10 hh:mm:ss** [range 00:00:00 … 18:12:15]
	The field has the format hh:mm:ss (hours : minutes : seconds): the default value 00:00:10 therefore corresponds to a delay of 10 seconds. The value 00:00:00 means that the value is sent at switch-on without waiting for the delay.	
Undercooling temperature A - cyclical sending	Model = (E)	**00:10:00 hh:mm:ss** [range 00:00:00 … 18:12:15]
	The field has the format hh:mm:ss (hours : minutes : seconds): the default value 00:10:00 therefore corresponds to a cyclical sending of the value of 10 minutes. The value 00:00:00 means that the value is not sent cyclically.	
Undercooling temperature A – min. change to be transmitted	Model = (E)	**Disabled** 0.5K 1K 2K 5K 10K
Exhaust temperature - delay to power ON	Model = (B), (D), (F)	**00:00:10 hh:mm:ss** [range 00:00:00 … 18:12:15]
	The field has the format hh:mm:ss (hours : minutes : seconds): the default value 00:00:10 therefore corresponds to a delay of 10 seconds. The value 00:00:00 means that the value is sent at switch-on without waiting for the delay.	
Exhaust temperature - cyclical sending	Model = (B), (D), (F)	**00:10:00 hh:mm:ss** [range 00:00:00 … 18:12:15]
	The field has the format hh:mm:ss (hours : minutes : seconds): the default value 00:10:00 therefore corresponds to a cyclical sending of the value of 10 minutes. The value 00:00:00 means that the value is not sent cyclically.	
Exhaust temperature - min. change to be transmitted	Model = (B), (D), (F)	**Disabled** 0.5K 1K 2K 5K 10K
Undercooling temperature B - delay to power ON	Model = (E)	**00:00:10 hh:mm:ss** [range 00:00:00 … 18:12:15]
	The field has the format hh:mm:ss (hours : minutes : seconds): the default value 00:00:10 therefore corresponds to a delay of 10 seconds. The value 00:00:00 means that the value is sent at switch-on without waiting for the delay.	

Parameter name	*Conditions*	Values
Undercooling temperature B - cyclical sending	Model = (E)	**00:10:00 hh:mm:ss** [range 00:00:00 … 18:12:15]
	The field has the format hh:mm:ss (hours : minutes : seconds): the default value 00:10:00 therefore corresponds to a cyclical sending of the value of 10 minutes. The value 00:00:00 means that the value is not sent cyclically.	
Undercooling temperature B – min. change to be transmitted	Model = (E)	**Disabled** 0.5K 1K 2K 5K 10K
Supply fan rotation turns - delay to power ON	Model = (E)	**00:00:10 hh:mm:ss** [range 00:00:00 … 18:12:15]
	The field has the format hh:mm:ss (hours : minutes : seconds): the default value 00:00:10 therefore corresponds to a delay of 10 seconds. The value 00:00:00 means that the value is sent at switch-on without waiting for the delay.	
Supply fan rotation turns - cyclical sending	Model = (E)	**00:10:00 hh:mm:ss** [range 00:00:00 … 18:12:15]
	The field has the format hh:mm:ss (hours : minutes : seconds): the default value 00:10:00 therefore corresponds to a cyclical sending of the value of 10 minutes. The value 00:00:00 means that the value is not sent cyclically.	
Supply fan rotation turns - min. change to be transmitted	Model = (E)	**Disabled** 20 rpm 30 rpm 40 rpm 50 rpm 80 rpm 100 rpm 150 rpm
Exhaust fan rotation turns - delay to power ON	Model = (E)	**00:00:10 hh:mm:ss** [range 00:00:00 … 18:12:15]
	The field has the format hh:mm:ss (hours : minutes : seconds): the default value 00:00:10 therefore corresponds to a delay of 10 seconds. The value 00:00:00 means that the value is sent at switch-on without waiting for the delay.	
Exhaust fan rotation turns - cyclical sending	Model = (E)	**00:10:00 hh:mm:ss** [range 00:00:00 … 18:12:15]
	The field has the format hh:mm:ss (hours : minutes : seconds): the default value 00:10:00 therefore corresponds to a cyclical sending of the value of 10 minutes. The value 00:00:00 means that the value is not sent cyclically.	
Exhaust fan rotation turns - min. change to be transmitted	Model = (E)	**Disabled** 20 rpm 30 rpm 40 rpm 50 rpm 80 rpm 100 rpm 150 rpm
Air pressure transducer - delay to power ON	Model = (C), (D)	**00:00:10 hh:mm:ss** [range 00:00:00 … 18:12:15]
	The field has the format hh:mm:ss (hours : minutes : seconds): the default value 00:00:10 therefore corresponds to a delay of 10 seconds. The value 00:00:00 means that the value is sent at switch-on without waiting for the delay.	

Parameter name	*Conditions*	Values
Air pressure transducer - cyclical sending	Model = (C), (D)	**00:10:00 hh:mm:ss** [range 00:00:00 … 18:12:15]
	The field has the format hh:mm:ss (hours : minutes : seconds): the default value 00:10:00 therefore corresponds to a cyclical sending of the value of 10 minutes. The value 00:00:00 means that the value is not sent cyclically.	
Air pressure transducer - min. change to be transmitted	Model = (C), (D)	**Disabled** 1 Pa 2 Pa 3 Pa 4 Pa 5 Pa
Integration valve - delay to power ON	Model = (C), (D)	**00:00:10 hh:mm:ss** [range 00:00:00 … 18:12:15]
	The field has the format hh:mm:ss (hours : minutes : seconds): the default value 00:00:10 therefore corresponds to a delay of 10 seconds. The value 00:00:00 means that the value is sent at switch-on without waiting for the delay.	
Integration valve - cyclical sending	Model = (C), (D)	**00:10:00 hh:mm:ss** [range 00:00:00 … 18:12:15]
	The field has the format hh:mm:ss (hours : minutes : seconds): the default value 00:10:00 therefore corresponds to a cyclical sending of the value of 10 minutes. The value 00:00:00 means that the value is not sent cyclically.	
Integration valve - min. change to be transmitted	Model = (C), (D)	**Disabled** 5 % 10 % 20 % 50 %
Pre-treatment valve - delay to power ON	Model = (C), (D), (E)	**00:00:10 hh:mm:ss** [range 00:00:00 … 18:12:15]
	The field has the format hh:mm:ss (hours : minutes : seconds): the default value 00:00:10 therefore corresponds to a delay of 10 seconds. The value 00:00:00 means that the value is sent at switch-on without waiting for the delay.	
Pre-treatment valve - cyclical sending	Model = (C), (D), (E)	**00:10:00 hh:mm:ss** [range 00:00:00 … 18:12:15]
	The field has the format hh:mm:ss (hours : minutes : seconds): the default value 00:10:00 therefore corresponds to a cyclical sending of the value of 10 minutes. The value 00:00:00 means that the value is not sent cyclically.	
Pre-treatment valve - min. change to be transmitted	Model = (C), (D), (E)	**Disabled** 5 % 10 % 20 % 50 %

4.7 Digital inputs

The control board of some air handling units is equipped with digital inputs through which it is possible to manage several functions; for example, calling up the Renewal, Economy or Boost operation modes, activating dehumidification or carrying out seasonal changeover. The interface allows the status of the digital inputs to be transmitted to the KNX bus. In the folder ***Digital inputs*** you set the power-on delay and cyclical sending.



Folder “Digital inputs” (e.g.. CHR unit …)

Parameter name	***Conditions***	**Values**
Digital input status - delay to power ON	Model = (B), (F)	**00:00:10 hh:mm:ss** [range 00:00:00 … 18:12:15]
	The field has the format hh:mm:ss (hours : minutes : seconds): the default value 00:00:10 therefore corresponds to a delay of 10 seconds. The value 00:00:00 means that the value is sent at switch-on without waiting for the delay.	
Digital input status - cyclical sending	Model = (B), (F)	**00:10:00 hh:mm:ss** [range 00:00:00 … 18:12:15]
	The field has the format hh:mm:ss (hours : minutes : seconds): the default value 00:10:00 therefore corresponds to a cyclical sending of the value of 10 minutes. The value 00:00:00 means that the value is not sent cyclically.	

4.8 Filters

The folder ***Filters*** allows you to set the parameters for sending alarms regarding filters. Ventilation units are equipped with filters to ensure that clean air is introduced into the building and to protect the heat exchanger from contamination by exhaust air. Dirty filters also increase the pressure drop of the unit and reduce the flow rate of supply air. For these reasons, the filters must be cleaned regularly and replaced if necessary. The ventilation units have an automatic detection function for dirty filters; the relevant message can be forwarded on the KNX bus from the interface for display on the home automation system supervision system.

As of 1 January 2018 (EU Regulation 1253, Annex II), ventilation units equipped with a filter must have a visual warning of the need to replace the filter. Changing the filter at regular intervals safeguards the performance and energy efficiency of the unit. If the ventilation unit is installed in locations that are difficult to access, it is essential that the warning signal is transmitted to the KNX bus system so that it can be made available to the end user and/or the system maintainer.

Parameter name	***Conditions***	**Values**
Filters hours alarm threshold - delay to power ON	Model = (B), (C), (D), (F)	**00:00:10 hh:mm:ss** [range 00:00:00 … 18:12:15]
	The field has the format hh:mm:ss (hours : minutes : seconds): the default value 00:00:10 therefore corresponds to a delay of 10 seconds. The value 00:00:00 means that the value is sent at switch-on without waiting for the delay.	
Filters hours alarm threshold - cyclical sending	Model = (B), (C), (D), (F)	**00:10:00 hh:mm:ss** [range 00:00:00 … 18:12:15]
	The field has the format hh:mm:ss (hours : minutes : seconds): the default value 00:10:00 therefore corresponds to a cyclical sending of the value of 10 minutes. The value 00:00:00 means that the value is not sent cyclically.	

5 KNX communication objects

5.1 List of objects

No.	Name	Condition	Flags	Datapoint
1	Connected ventilation unit		R-CT--	[1.2] DPT_Bool
2	OFF ventilation unit	Model = (A)(B)(C)(D)(E)(F)	RWCT--	[1.1] DPT_Switch
3	Machine selection alarm		R-CT--	[1.5] DPT_Alarm
5	Unit type	Enable extended parameters = Yes	R-CT--	[7.1] DPT_Value_2_Ucount
6	Version		R-CT--	[7.1] DPT_Value_2_Ucount
7	Release		R-CT--	[7.1] DPT_Value_2_Ucount
8	Installation right/left	Model = (F)	R-CT--	[7.1] DPT_Value_2_Ucount
10	Communication timeout	Enable extended parameters = Yes	R-CT--	[7.5] DPT_TimePeriodSec
12	Input water temperature	Model = (A)(C)(D)(E)	R-CT--	[9.1] DPT_Value_Temp
13	Overheating temperature	Model = (E)	R-CT--	[9.1] DPT_Value_Temp
14	Evaporator temperature	Model = (A)(C)(D)(E)	R-CT--	[9.1] DPT_Value_Temp
15	Condensator temperature	Model = (A)(C)(D)	R-CT--	[9.1] DPT_Value_Temp
15	Post-heating condensator temperature	Model = (E)	R-CT--	[9.1] DPT_Value_Temp
16	Heat sink temperature	Model = (D)(E)	R-CT--	[9.1] DPT_Value_Temp
17	External air temperature		R-CT--	[9.1] DPT_Value_Temp
18	Inflow air temperature		R-CT--	[9.1] DPT_Value_Temp
19	Extraction air temperature	Model = (B)(D)(F)	R-CT--	[9.1] DPT_Value_Temp
19	Post-heating undercooling temperature	Model = (E)	R-CT--	[9.1] DPT_Value_Temp
20	Exhaust air temperature	Model = (B)(D)(F)	R-CT--	[9.1] DPT_Value_Temp
20	Heat sink undercooling temperature	Model = (E)	R-CT--	[9.1] DPT_Value_Temp
22	Supply fan rotation turns	Model = (B)(C)(D)(E)(F)	R-CT--	[8.*] DPT custom [1]
23	Exhaust fan rotation turns	Model = (B)(C)(D)(E)(F)	R-CT--	[8.*] DPT custom [1]
24	Air pressure transducer	Model = (C)(D)	R-CT--	[9.6] DPT_Value_Pres
25	Integration valve	Model = (C)(D)	R-CT--	[5.1] DPT_Scaling
28	Pre-treatment valve position	Model = (A)(C)(D)(E)	R-CT--	[5.4] DPT_Percent_U8
32	Filters hours alarm threshold (write)	Model = (A)(B)(C)(D)(F)	-WCTU-	[7.7] DPT_TimePeriodHrs
36	Dehumidification request ID status	Model = (B)(F)	R-CT--	[1.1] DPT_Switch
38	Renewal ID status	Model = (B)(F)	R-CT--	[1.1] DPT_Switch
41	Boost request ID status	Model = (B)(F)	R-CT--	[1.1] DPT_Switch
51	Damaged/disconnected air delivery temperature probe	Model = (A)(B)(C)(D)(E)(F)	R-CT--	[1.5] DPT_Alarm
52	Damaged/disconnected summer supply exchanger temperature probe	Model = (A)	R-CT--	[1.5] DPT_Alarm
52	Damaged/disconnected air extraction temperature probe	Model = (B)(F)	R-CT--	[1.5] DPT_Alarm
52	Damaged/disconnected evaporator temperature probe	Model = (C)(D)(E)	R-CT--	[1.5] DPT_Alarm
53	Damaged/disconnected air exhaust temperature probe	Model = (B)(F)	R-CT--	[1.5] DPT_Alarm
53	Damaged/disconnected air extraction temperature probe	Model = (D)	R-CT--	[1.5] DPT_Alarm
53	Damaged/disconnected undercooling temperature probe B	Model = (E)	R-CT--	[1.5] DPT_Alarm
54	Damaged/disconnected exhaust temperature probe	Model = (D)	R-CT--	[1.5] DPT_Alarm
54	Damaged/disconnected heat sink temperature probe	Model = (E)	R-CT--	[1.5] DPT_Alarm
55	Damaged/disconnected undercooling temperature probe A	Model = (E)	R-CT--	[1.5] DPT_Alarm
56	Damaged/disconnected water temperature probe	Model = (A)(C)(D)(E)	R-CT--	[1.5] DPT_Alarm
57	Damaged/disconnected exhaust condensator probe	Model = (D)(E)	R-CT--	[1.5] DPT_Alarm
58	Damaged/disconnected external air temperature probe	Model = (B)(C)(D)(E)(F)	R-CT--	[1.5] DPT_Alarm
59	Damaged/disconnected summer exhaust exchanger temperature probe	Model = (A)	R-CT--	[1.5] DPT_Alarm
59	Damaged/disconnected condenser temperature probe	Model = (C)	R-CT--	[1.5] DPT_Alarm
59	Damaged/disconnected post-heating condenser temperature probe	Model = (D)	R-CT--	[1.5] DPT_Alarm
59	Gas transducer damaged/disconnected	Model = (E)	R-CT--	[1.5] DPT_Alarm
60	Air pressure transducer damaged/disconnected	Model = (C)(D)	R-CT--	[1.5] DPT_Alarm

[1] The 16 bit DPT used for communication objects “22: Supply fan rotation turns” e “23: Exhaust fan rotation turns” is a custom type. In this case it is used to represent the rotation speed of a fan controlled by a motor, without indication of the direction of rotation.
Name: SignedSpeed
Description: Value of rotational speed (regardless of direction of rotation)
Encoding: V
Unit: rpm (rounds per minute)
Range: -32768 ... +32767
Resolution: 1 rpm

No.	Name	Condition	Flags	Datapoint
60	Air transducer A damaged/disconnected	Model = (E)	R-CT--	[1.5] DPT_Alarm
61	Air transducer B damaged/disconnected	Model = (E)	R-CT--	[1.5] DPT_Alarm
64	Damaged/disconnected duct temperature probe	Model = (B)(F)	R-CT--	[1.5] DPT_Alarm
67	Gas shortage alarm	Model = (A)(C)(D)	R-CT--	[1.5] DPT_Alarm
67	Gas low pressure alarm	Model = (E)	R-CT--	[1.5] DPT_Alarm
68	Condensation temperature alarm	Model = (A)	R-CT--	[1.5] DPT_Alarm
68	Gas high pressure alarm	Model = (E)	R-CT--	[1.5] DPT_Alarm
69	Gas high temperature alarm	Model = (C)(D)	R-CT--	[1.5] DPT_Alarm
69	Compressor high temperature alarm	Model = (E)	R-CT--	[1.5] DPT_Alarm
70	Communication alarm	Model = (E)	R-CT--	[1.5] DPT_Alarm
72	Antifreeze alarm (coil protection)	Model = (A)	R-CT--	[1.5] DPT_Alarm
72	Defrosting alarm	Model = (B)(F)	R-CT--	[1.5] DPT_Alarm
72	Water high temperature alarm	Model = (C)(D)(E)	R-CT--	[1.5] DPT_Alarm
73	Input ventilator alarm	Model = (B)(C)(D)(E)(F)	R-CT--	[1.5] DPT_Alarm
74	Extraction ventilator alarm	Model = (B)(C)(D)(E)(F)	R-CT--	[1.5] DPT_Alarm
75	Defrosting alarm (evaporation low temp.)	Model = (A)	R-CT--	[1.5] DPT_Alarm
77	Dirty supply filter alarm	Model = (A)(B)(C)(D)(F)	R-CT--	[1.5] DPT_Alarm
78	Dirty exhaust filter alarm	Model = (A)(B)(C)(D)(F)	R-CT--	[1.5] DPT_Alarm
79	No filter change alarm	Model = (A)(C)(D)	R-CT--	[1.5] DPT_Alarm
83	Season selection via bus	Model = (A)(B)(C)(D)(E)(F)	-WCTU-	[1.1] DPT_Switch
84	Dehumidification request	Model = (A)(B)(C)(D)(E)(F)	-WCTU-	[1.1] DPT_Switch
85	Recirculation mode request	Model = (C)(D)(E)	-WCTU-	[1.1] DPT_Switch
86	Renewal request	Model = (A)(C)(D)(E)	-WCTU-	[1.1] DPT_Switch
86	Renewal request (Speed 2)	Model = (B)(F)	-WCTU-	[1.1] DPT_Switch
88	Free-Cooling forced request	Model = (A)(B)(C)(D)(E)(F)	-WCTU-	[1.1] DPT_Switch
89	Boost request	Model = (A)(C)(D)(E)	-WCTU-	[1.1] DPT_Switch
89	Boost request (Speed 3)	Model = (B)(F)	-WCTU-	[1.1] DPT_Switch
90	Thermal integration request	Model = (A)(B)(C)(D)(E)(F)	-WCTU-	[1.1] DPT_Switch
92	ECONOMY request (Speed 1)	Model = (B)(F)	-WCTU-	[1.1] DPT_Switch
99	Season	Model = (A)(B)(C)(D)(E)(F)	R-CT--	[1.1] DPT_Switch
100	Dehumidification active	Model = (A)(B)(C)(D)(E)(F)	R-CT--	[1.1] DPT_Switch
101	Recirculation mode active	Model = (C)(D)(E)	R-CT--	[1.1] DPT_Switch
102	Renewal active	Model = (A)(B)(C)(D)(E)(F)	R-CT--	[1.1] DPT_Switch
104	Free-cooling active	Model = (A)(B)(C)(D)(E)(F)	R-CT--	[1.1] DPT_Switch
105	Boost active	Model = (A)(B)(C)(D)(E)(F)	R-CT--	[1.1] DPT_Switch
106	Thermal integration active	Model = (A)(B)(C)(D)(E)(F)	R-CT--	[1.1] DPT_Switch
108	Economy call	Model = (B)(C)(D)(F)	R-CT--	[1.1] DPT_Switch
115	Antifreeze cycle in progress	Model = (B)(F)	R-CT--	[1.1] DPT_Switch
115	Defrost function in progress	Model = (E)	R-CT--	[1.1] DPT_Switch
116	Drain-trap cycle in progress	Model = (E)	R-CT--	[1.1] DPT_Switch
131	Supply air temperature set - summer (write)	Model = (A)(B)(C)(D)(F)	-WCTU-	[9.1] DPT_Value_Temp
131	Supply air temperature set (write)	Model = (E)	-WCTU-	[9.1] DPT_Value_Temp
133	Renewal flow rate set (write)	Model = (B)(C)(D)(E)(F) Enable extended parameters = Yes	-WCTU-	[9.9] DPT_Value_AirFlow
134	Supply flow rate set - winter (write)	Model = (A) Enable extended parameters = Yes	-WCTU-	[9.9] DPT_Value_AirFlow
134	Supply flow rate set for dehumidification (write)	Model = (B)(F) Enable extended parameters = Yes	-WCTU-	[9.9] DPT_Value_AirFlow
134	Recirculation mode flow rate (write)	Model = (C)(D)(E) Enable extended parameters = Yes	-WCTU-	[9.9] DPT_Value_AirFlow
135	Boost flow rate set (write)	Model = (A)(B)(C)(D)(E)(F) Enable extended parameters = Yes	-WCTU-	[9.9] DPT_Value_AirFlow
136	Free-cooling flow rate set (write)	Model = (A)(B)(C)(D)(E)(F) Enable extended parameters = Yes	-WCTU-	[9.9] DPT_Value_AirFlow
137	Economy reduction percentage (write)	Model = (B)(C)(D)(E)(F)	-WCTU-	[5.1] DPT_Scaling
138	Boost deactivation delay (write)	Model = (A)(B)(C)(D)(F)	-WCTU-	[7.6] DPT_TimePeriodMin
139	Free-cooling temperature set (write)	Model = (C)(D)(E)(F)	-WCTU-	[9.1] DPT_Value_Temp
140	Supply air temperature set - winter (write)	Model = (A)(B)(C)(D)(F)	-WCTU-	[9.1] DPT_Value_Temp
141	Supply flow rate set - summer (write)	Model = (A) Enable extended parameters = Yes	-WCTU-	[9.9] DPT_Value_AirFlow
142	Extraction flow rate set - summer (write)	Model = (A) Enable extended parameters = Yes	-WCTU-	[9.9] DPT_Value_AirFlow
142	Antifreeze temperature set - renewal antifreeze protection (write)	Model = (B)(C)(D)(F) Enable extended parameters = Yes	-WCTU-	[9.1] DPT_Value_Temp
143	Extraction flow rate set - winter (write)	Model = (A)	-WCTU-	[9.9] DPT_Value_AirFlow
143	Exhaust dehumidification flow rate (write)	Model = (B)(F)	-WCTU-	[9.9] DPT_Value_AirFlow
144	Supply air temperature set - winter integration (write)	Model = (A)(B)(C)(D)(F)	-WCTU-	[9.1] DPT_Value_Temp
145	Supply air temperature set - summer integration (write)	Model = (A)(B)(C)(D)(F)	-WCTU-	[9.1] DPT_Value_Temp
150	Start clean air definition test (write)	Model = (B)(C)(D)(F) Enable extended parameters = Yes	-WCTU-	[1.10] DPT_Start
152	Filters alarm reset (write)	Model = (A)(B)(C)(D)(F)	-WCTU-	[1.15] DPT_Reset
153	Heartbit (write)	Model = (A)(B)(C)(D)(F)	-WCTU-	[7.1] DPT_Value_2_Ucount
159	Block hours missed filter change (write)	Model = (A)(C)(D)	-WCTU-	[7.7] DPT_TimePeriodHrs
160	Filters hours alarm threshold (read)	Model = (A)(B)(C)(D)(F)	R-CT--	[7.7] DPT_TimePeriodHrs
162	Supply air temperature set - summer (read)	Model = (A)(B)(C)(D)(F)	R-CT--	[9.1] DPT_Value_Temp
162	Supply air temperature set (read)	Model = (E)	R-CT--	[9.1] DPT_Value_Temp
164	Renewal flow rate set (read)	Model = (B)(C)(D)(E)(F) Enable extended parameters = Yes	R-CT--	[9.9] DPT_Value_AirFlow
165	Supply flow rate set - winter (read)	Model = (A) Enable extended parameters = Yes	R-CT--	[9.9] DPT_Value_AirFlow

No.	Name	Condition	Flags	Datapoint
165	Supply flow rate set for dehumidification (read)	Model = (B)(F) Enable extended parameters = Yes	R-CT--	[9.9] DPT_Value_AirFlow
165	Recirculation mode flow rate (read)	Model = (C)(D)(E) Enable extended parameters = Yes	R-CT--	[9.9] DPT_Value_AirFlow
166	Boost flow rate set (read)	Model = (A)(B)(C)(D)(E)(F) Enable extended parameters = Yes	R-CT--	[9.9] DPT_Value_AirFlow
167	Free-cooling flow rate set (read)	Model = (A)(B)(C)(D)(E)(F) Enable extended parameters = Yes	R-CT--	[9.9] DPT_Value_AirFlow
168	Economy reduction percentage (read)	Model = (B)(C)(D)(E)(F)	R-CT--	[5.1] DPT_Scaling
169	Boost deactivation delay (read)	Model = (A)(B)(C)(D)(F)	R-CT--	[7.6] DPT_TimePeriodMin
170	Free-cooling temperature set (read)	Model = (C)(D)(E)(F)	R-CT--	[9.1] DPT_Value_Temp
171	Supply air temperature set - winter (read)	Model = (A)(B)(C)(D)(F)	R-CT--	[9.1] DPT_Value_Temp
172	Supply flow rate set - summer (read)	Model = (A) Enable extended parameters = Yes	R-CT--	[9.9] DPT_Value_AirFlow
173	Extraction flow rate set - summer (read)	Model = (A) Enable extended parameters = Yes	R-CT--	[9.9] DPT_Value_AirFlow
173	Antifreeze temperature set - renewal antifreeze protection (read)	Model = (B)(C)(D)(F) Enable extended parameters = Yes	R-CT--	[9.1] DPT_Value_Temp
174	Extraction flow rate set - winter (read)	Model = (A)	R-CT--	[9.9] DPT_Value_AirFlow
174	Exhaust dehumidification flow rate (read)	Model = (B)(F)	R-CT--	[9.9] DPT_Value_AirFlow
175	Supply air temperature set - winter integration (read)	Model = (A)(B)(C)(D)(F)	R-CT--	[9.1] DPT_Value_Temp
176	Supply air temperature set - summer integration (read)	Model = (A)(B)(C)(D)(F)	R-CT--	[9.1] DPT_Value_Temp
181	Start clean air definition test (read)	Model = (B)(C)(D)(F) Enable extended parameters = Yes	R-CT--	[1.10] DPT_Start
183	Filters alarm reset (read)	Model = (A)(B)(C)(D)(F)	R-CT--	[1.15] DPT_Reset
184	Heartbit (read)	Model = (A)(B)(C)(D)(F)	R-CT--	[7.1] DPT_Value_2_Ucount
190	Block hours missed filter change (read)	Model = (A)(C)(D)	R-CT--	[7.7] DPT_TimePeriodHrs
191	Controls for mechanical ventilation system (write)	Model = (A)(B)(C)(D)(E)(F)	-WCTU-	[7.1] DPT_Value_2_Ucount
192	Controls for mechanical ventilation system (read)	Model = (A)(B)(C)(D)(E)(F)	R-CT--	[7.1] DPT_Value_2_Ucount

The value of the communication objects concerning the air flow rate of the air handling units is represented by the Datapoint [9.9] DPT_Value_AirFlow which also contains decimals. In the case of supervision and visualisation for KNX systems with the functionality for rounding to the nearest whole number, it is recommended that the flow rate values are displayed without the decimal part.

5.2 Note about the objects “Aggregate commands for mechanical ventilation”

Communication objects 191 and 192 allow respectively the writing and reading of aggregate commands for the different VMC units. These objects are particularly useful in the construction of a system supervision. The terminology of the commands is specific for each air handling unit; a general description is given in the table below. The tables on the following pages list the commands independently for each of the supported RDZ air handling units. The availability of commands depends on the unit considered.

Function	Meaning
Renewal	The function activates both the inlet and exhaust fans and controls the dampers so as to draw in clean outside air to be introduced into the room and take exhaust air to be expelled outside the building
Economy	The function activates the fans according to the parameters set for the "Economy" mode: this allows a reduction in air flow rates compared to the "Renewal" mode
Boost	The function activates the fans according to the parameters set for the "Boost" mode: this allows an increase in air flow rates compared to the "Renewal" mode for faster evacuation of exhausted air
Integration	The function activates the heat exchanger to integrate the sensible heat to be supplied to or removed from the room in the winter or summer season respectively
Free-cooling	The function activates the fans and, by means of the damper, diverts the air aspirated from outside the building to the by-pass duct so that it does not pass through the heat exchanger
Dehumidification	The function activates the refrigeration circuit; by default the recirculation mode starts
Recirculation	The function activates the inlet fan, recirculating the room air

The operating logic of the air handling unit is resident on the control board mounted on the machine. The activation of an operating mode, requested by a KNX device and transmitted to the control board by means of the Modbus-KNX interface, does not automatically determine the execution of the requested function; in fact, it is subject to the conditions foreseen and detected by the control board.

RDZ UAP 201 PDC (Model A)

Summer

Function	Value
dehumidification	3
renewal	9
integration	129
boost	65
freecooling	41
dehumidification + integration	131
dehumidification + renewal	11
dehumidification + renewal + integration	139
dehumidification + freecooling	43
dehumidification + boost	67
renewal + integration	137
renewal + boost	73
renewal + freecooling	41
integration + boost	193
integration + freecooling	169
boost + freecooling	105

Winter

Function	Value
renewal	8
integration	128
boost	64
freecooling	40
renewal + integration	136
renewal + boost	72
renewal + freecooling	40
integration + boost	192
integration + freecooling	168
boost + freecooling	104

RDZ CHR (Model B)

Summer

Function	Value
dehumidification	3
renewal	9
integration	129
boost	65
freecooling	41
economy	513
dehumidification + integration	131
dehumidification + renewal	11
dehumidification + renewal + integration	139
dehumidification + freecooling	43
dehumidification + boost	67
renewal + integration	137
renewal + boost	73
renewal + freecooling	41
renewal + economy	521
integration + boost	193
integration + freecooling	169
boost + freecooling	105

Winter

Function	Value
renewal	8
integration	128
boost	64
freecooling	40
economy	512
renewal + integration	136
renewal + boost	72
renewal + freecooling	40
renewal + economy	520
integration + boost	192
integration + freecooling	168
boost + freecooling	104

RDZ UC 300 Vx (Model C)

Summer

Function	Value
dehumidification	3
renewal	9
integration	129
boost	65
freecooling	41
recirculation	5
dehumidification + integration	131
dehumidification + renewal	11
dehumidification + renewal + integration	139
dehumidification + recirculation	7
dehumidification + freecooling	43
dehumidification + boost	67
renewal + integration	137
renewal + boost	73
renewal + freecooling	41
recirculation + renewal	13
recirculation + renewal + dehumidification	15
recirculation + renewal + integration	141
recirculation + integration	133
recirculation + boost	69
recirculation + freecooling	45
integration + boost	193
integration + freecooling	169
boost + freecooling	105

Winter

Function	Value
renewal	8
integration	128
boost	64
freecooling	40
recirculation	4
renewal + integration	136
renewal + boost	72
renewal + freecooling	40
recirculation + renewal	12
recirculation + renewal + integration	140
recirculation + integration	132
recirculation + boost	68
recirculation + freecooling	44
integration + boost	192
integration + freecooling	168
boost + freecooling	104

RDZ UC 360 V1 (Model D)

Summer

Function	Value
dehumidification	3
renewal	9
integration	129
boost	65
freecooling	41
recirculation	5
dehumidification + integration	131
dehumidification + renewal	11
dehumidification + renewal + integration	139
dehumidification + recirculation	7
dehumidification + freecooling	43
dehumidification + boost	67
renewal + integration	137
renewal + boost	73
renewal + freecooling	41
recirculation + renewal	13
recirculation + renewal + dehumidification	15
recirculation + renewal + integration	141
recirculation + integration	133
recirculation + boost	69
recirculation + freecooling	45
integration + boost	193
integration + freecooling	169
boost + freecooling	105

Winter

Function	Value
renewal	8
integration	128
boost	64
freecooling	40
recirculation	4
renewal + integration	136
renewal + boost	72
renewal + freecooling	40
recirculation + renewal	12
recirculation + renewal + integration	140
recirculation + integration	132
recirculation + boost	68
recirculation + freecooling	44
integration + boost	192
integration + freecooling	168
boost + freecooling	104

RDZ UC 360 MHE, UC 500 MHE, UC 500 MVHE (Model E)

Summer

Function	Value
dehumidification	387
renewal	265
integration	387
boost	321
freecooling	297
recirculation	389
dehumidification + integration	387
dehumidification + renewal	395
dehumidification + renewal + integration	395
dehumidification + recirculation	387
dehumidification + freecooling	419
dehumidification + boost	451
renewal + integration	395
renewal + boost	329
renewal + freecooling	297
recirculation + renewal	393
recirculation + renewal + dehumidification	399
recirculation + renewal + integration	399
recirculation + integration	397
recirculation + boost	453
recirculation + freecooling	421
integration + boost	451
integration + freecooling	421
boost + freecooling	361

Note: values including valve H2O enabling (value 256)

Winter

Function	Value
renewal	264
integration	388
boost	320
freecooling	296
recirculation	388
renewal + integration	394
renewal + boost	328
renewal + freecooling	296
recirculation + renewal	396
recirculation + renewal + integration	398
recirculation + integration	390
recirculation + boost	452
recirculation + freecooling	420
integration + boost	450
integration + freecooling	420
boost + freecooling	360

RDZ WHR150, WHR250, WHR400 (Model F)

Summer

Function	Value
dehumidification	3
renewal	9
integration	129
boost	65
freecooling	41
economy	513
dehumidification + integration	131
dehumidification + renewal	11
dehumidification + renewal + integration	139
dehumidification + freecooling	43
dehumidification + boost	67
renewal + integration	137
renewal + boost	73
renewal + freecooling	41
renewal + economy	521
integration + boost	193
integration + freecooling	169
boost + freecooling	105

Winter

Function	Value
renewal	8
integration	128
boost	64
freecooling	40
economy	512
renewal + integration	136
renewal + boost	72
renewal + freecooling	40
renewal + economy	520
integration + boost	192
integration + freecooling	168
boost + freecooling	104

6 Warnings

- Installation, electrical connection, configuration and commissioning of the device may only be carried out by qualified personnel.
- Opening the device housing will immediately invalidate the warranty.
- Defective ekinex® KNX devices to be returned to the manufacturer should be sent to the following address: EKINEX S.p.A. - Via Novara 37, I-28010 Vaprio d'Agogna (NO) Italy.

7 Other information

- This application manual is intended for installers, system integrators and system configurators.
- For further product information, please contact the ekinex® technical support service at support@ekinex.com or visit the website www.ekinex.com.
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