# Documentation on CDV-KNX interface / starting from CDV firmware version V1.2.0

**(Document version V1.6 –27.02.20)**

Documentation on CDV-KNX interface / starting from CDV FW version V1.2.0

## Note:
The use of the KNX application file Maico_SIM_KWL.knxprod in connection with the KNX module K-SM (0092.0557) is only possible starting from CDV firmware version V1.2.0.
Download the KNX application file https://www.maico-ventilatoren.com/en/service/downloads. The KNX project file previously provided to be downloaded, is only supported by the CDV control up to CDV firmware V1.1.1.

**For new installations / commissioning of KNX systems, we recommend exclusively the use of the KNX application file Maico_SIM_KWL.knxprod from CDV firmware version V1.2.3.** How to perform the firmware update of the CDV controller is  described in step 2 of this document.

## Notice:
**Carrying out the control update to firmware V1.2.0 (or newer) entails reworking the KNX programming (ETS) for CDV units with FW version V1.1.1 (or older) already integrated in the KNX system.**

**Case:** Update of the unit control to V1.2.0. (or newer).
Problem: The CDV unit can no longer be reached via the bus within the KNX system.

**Solution 1**: The CDV unit is newly integrated into the KNX system using a new KNX application file. -> Programming of the CDV unit within the KNX system must be created again.

**Solution 2**: Installing the firmware V1.1.2 (Firmware KNX Backup) using the Update Tool of the CDV commissioning software (see step 2 in this document). -> Reprogramming the existing application program on the K-SM is sufficient to integrate the CDV unit into the KNX system again.

## In general:
After integration into the KNX bus system, the optional K-SM module functions as any control element on the CDV unit. Regardless of whether the CDV unit is controlled from the control-section or via the KNX module, the last command received remains valid.

## Integration of Maico K-SM into the KNX bus system
The construction of a KNX network or the integration of KNX-capable units into a KNX bus system is usually carried out by a system integrator. The programming of such a system (KNX) is only possible by using an ETS software.
The application file Maico_SIM_KLW.knxprod is available as a basis for integrating the KNX module in the ETS software. This file can be imported using the import function in the ETS software. Once the process is complete, the imported application file (device file) can be used as the basis for further integration in the KNX system.

## Important information:
The failure of the KNX bus voltage has no effect on the CDV unit. The functions of the device are still possible without restrictions.
After restoring the KNX bus voltage, the CDV unit must be switched off and switched back on by means of a device switch to start the K_SM initialization. After the CDV unit has been restarted, it is once again available on the KNX bus without restrictions. **As of CDV firmware version V1.2.3, the initialization of the K_SM takes place automatically after bus voltage failure or bus reset.**

## Installing KNX module

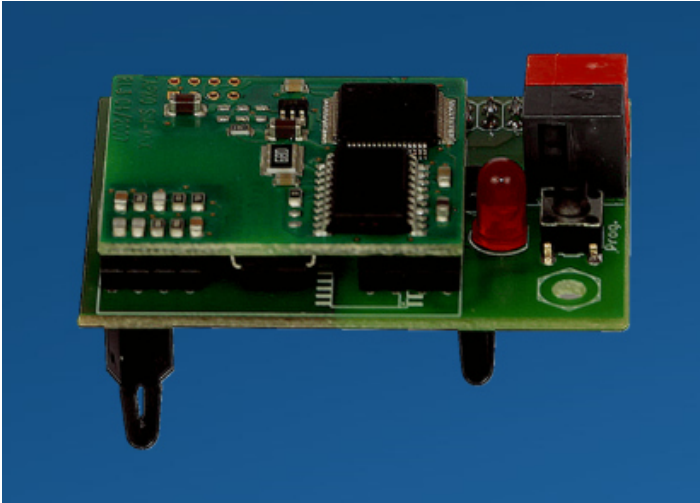Documentation on CDV-KNX interface / starting from CDV FW version V1.2.0



**Figure 1: KNX-Modul K-SM (0092.0557)**

# Step 1
Install and commission the KNX module K-SM according to the enclosed installation instructions "KNX Module K-SM".

**Note: KNX module K-SM must be activated by means of CDV commissioning software, touch operating unit or web server under Settings -> KNX. (KNX setting = yes).**

# Step 2
Perform a control update of the unit control. The firmware update is carried out using the update tool of the CDV commissioning software (from V2.4).
   a. Download the CDV commissioning software at https://www.maico-ventilatoren.com/en/service/downloads.
   b. Installation of the software on the PC, laptop.
   c. Connect the CDV control and PC/laptop via USB cable.
   d. Start CDV update. Update the unit control with the latest firmware version (CDV update V1.2.0.Image or newer).

   **Attention: see page 2!**

# Step 3
Activate KNX bus power supply. The KNX module is now powered by the KNX bus and can be configured and parameterised using the ETS software.

# Step 4
To assign a physical address, the module's programming mode first has to be activated. This is done by pressing the programming button on the KNX module. When the KNX module is in programming mode, its red LED lights up and a physical address can be issued via the ETS software. Once the physical address has been successfully programmed, the LED goes out automatically. Programming mode can also be deactivated manually by pressing the button again.

## Step 7

Once the module address has been successfully programmed, the unit can be closed again. To do this, the control console, with the control unit, is hooked into the control box and the unit cover is closed. The power supply to the WS/WR unit can then be reactivated.

## Application program and group addresses

If group addresses have been assigned to all the necessary communication objects, the programming of the KNX module can be started. Firstly the ETS software is used to transfer the application program to the KNX module. The application program contains the basic function of the KNX module. The group addresses and parameters are then transferred.

## KNX objects list / CDV units starting from firmware version V1.2

| Name | Object no. | Function | Type | Flags | | | | | Min | Max | Step width | Unit |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | K | L | S | Ü | A | | | | |
| **Operating mode** | Object 0 | Read operating mode | DPT17.001 (scene number) | ✓ | ✓ | | ✓ | ✓ | 1 | 6 | 1 | - |
| **Operating mode** | Object 1 | Write operating mode | DPT17.001 (scene number) | ✓ | | ✓ | | ✓ | 1 | 6 | 1 | - |
| **Season** | Object 2 | Read season | DPT1.001 (switching) | ✓ | ✓ | | ✓ | ✓ | Off | On | - | - |
| **Season** | Object 3 | Write season | DPT1.001 (switching) | ✓ | | ✓ | | ✓ | Off | On | - | - |
| **Ventilation level** | Object 4 | Read ventilation level | DPT17.001 (scene number) | ✓ | ✓ | | ✓ | ✓ | 1 | 5 | 1 | - |
| **Ventilation level** | Object 5 | Write ventilation level | DPT17.001 (scene number) | ✓ | | ✓ | | ✓ | 1 | 5 | 1 | - |
| **Intermittent ventilation** | Object 6 | Read intermittent ventilation | DPT1.001 (switching) | ✓ | ✓ | | ✓ | ✓ | Off | On | - | - |
| **Intermittent ventilation** | Object 7 | Write intermittent ventilation | DPT1.001 (switching) | ✓ | | ✓ | | ✓ | Off | On | - | - |
| **Intermittent ventilation – remaining time** | Object 8 | Read remaining intermittent ventilation time | DPT7.005 (time in seconds) | ✓ | ✓ | | ✓ | ✓ | 0 | 5400 | 1 | sec. |
| **Duration of intermittent ventilation** | Object 9 | Read duration of intermittent ventilation | DPT7.005 (time in seconds) | ✓ | ✓ | | ✓ | ✓ | 300 | 5400 | 1 | sec. |
| **Duration of intermittent ventilation** | Object 10 | Write duration of intermittent ventilation | DPT7.005 (time in seconds) | ✓ | | ✓ | | ✓ | 300 | 5400 | 60 | sec. |
| **Room temperature (actual)** | Object 11 | Read room temperature | DPT9.001 (temperature in °C) | ✓ | ✓ | | ✓ | ✓ | - | - | 0.01 | °C |
| **Room temperature (setpoint)** | Object 12 | Read room temperature | DPT9.001 (temperature in °C) | ✓ | ✓ | | ✓ | ✓ | - | - | 0.01 | °C |

| Name | Object | Description | DPT | | | | | | Min | Max | Res | Unit |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Room temperature (setpoint)** | Object 13 | Write room temperature | DPT9.001 (temperature in °C) | ✓ | | ✓ | | ✓ | 18 | 25 | 0.1 | °C |
| **Room temperature KNX** | Object 14 | Write room temperature via KNX | DPT9.001 (temperature in °C) | ✓ | | ✓ | | ✓ | 0 | 50 | 0.1 | °C |
| **Max. room temperature (actual)** | Object 15 | Read maximum room temperature | DPT9.001 (temperature in °C) | ✓ | ✓ | | ✓ | ✓ | - | - | 0.01 | °C |
| **Max. room temperature (set)** | Object 16 | Write maximum room temperature | DPT9.001 (temperature in °C) | ✓ | | ✓ | | ✓ | 18 | 30 | 0.1 | °C |
| **Min. supply air temperature cooling (actual)** | Object 17 | Read T-supply air min. cooling | DPT9.001 (temperature in °C) | ✓ | ✓ | | ✓ | ✓ | - | - | 0.5 | °C |
| **Min. supply air temperature cooling (set)** | Object 18 | Write T-supply air min. cooling | DPT9.001 (temperature in °C) | ✓ | | ✓ | | ✓ | 8 | 29 | 0.5 | °C |
| **Volumetric flow of supply air (actual)** | Object 19 | Read current volumetric flow of supply air | DPT9.009 (air throughput in m³/h) | ✓ | ✓ | | ✓ | ✓ | - | - | 1 | m³/h |
| **Volumetric flow of exhaust air (actual)** | Object 20 | Read current volumetric flow of exhaust air | DPT9.009 (air throughput in m³/h) | ✓ | ✓ | | ✓ | ✓ | - | - | 1 | m³/h |
| **Speed of supply air fan (actual)** | Object 21 | Read current speed of supply air fan | DPT14.033 (frequency Hz) | ✓ | ✓ | | ✓ | ✓ | - | - | 0.01 | Hz |
| **Speed of exhaust air fan (actual)** | Object 22 | Read current speed of exhaust air fan | DPT14.033 (frequency Hz) | ✓ | ✓ | | ✓ | ✓ | - | - | 0.01 | Hz |
| **Supply air temperature** | Object 23 | Read measurement of supply air temp. | DPT9.001 (temperature in °C) | ✓ | ✓ | | ✓ | ✓ | - | - | 0.01 | °C |
| **Temperature of outgoing air** | Object 24 | Read measurement of outgoing air temp. | DPT9.001 (temperature in °C) | ✓ | ✓ | | ✓ | ✓ | | | 0.01 | °C |
| **Temperature of air at unit inlet** | Object 25 | Read measured value temp. of air at unit inlet | DPT9.001 (temperature in °C) | ✓ | ✓ | | ✓ | ✓ | | | 0.01 | °C |
| **Temperature of exhaust air** | Object 26 | Read measurement of exhaust air temp. | DPT9.001 (temperature in °C) | ✓ | ✓ | | ✓ | ✓ | | | 0.01 | °C |
| **Relative humidity exhaust air** | Object 27 | Read humidity value exhaust air | DPT9.007 (humidity %) | ✓ | ✓ | | ✓ | ✓ | | | 0.1 | %r.h. |
| **Room sensor external air** | Object 28 | Write air quality value via KNX | DPT9.008 (parts / million | ✓ | | ✓ | | ✓ | 0 | 3000 | 1 | ppm |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| quality 1 | | | ppm) | | | | | | | | | |
| Room sensor external air quality 2 | Object 29 | Write air quality value via KNX | DPT9.008 (parts / million ppm) | ✓ | | ✓ | | ✓ | 0 | 3000 | 1 | ppm |
| Room sensor external air quality 3 | Object 30 | Write air quality value via KNX | DPT9.008 (parts / million ppm) | ✓ | | ✓ | | ✓ | 0 | 3000 | 1 | ppm |
| Room sensor external relative humidity 1 | Object 31 | Write relative humidity value via KNX | DPT9.001 (Humidity %) | ✓ | | ✓ | | ✓ | 0 | 100 | 0.1 | %r.h. |
| Room sensor external relative humidity 2 | Object 32 | Write relative humidity value via KNX | DPT9.007 (Humidity %) | ✓ | | ✓ | | ✓ | 0 | 100 | 0.1 | %r.h. |
| Time remaining, unit filter | Object 33 | Read time remaining for unit filter | DPT7.007 (time h) | ✓ | ✓ | | ✓ | ✓ | - | - | 1 | Hour (h) |
| Time remaining, external filter | Object 34 | Read time remaining for external filter | DPT7.007 (time h) | ✓ | ✓ | | ✓ | ✓ | - | - | 1 | Hour (h) |
| Time remaining, room filter | Object 35 | Read time remaining for room filter | DPT7.007 (time h) | ✓ | ✓ | | ✓ | ✓ | - | - | 1 | Hour (h) |
| Acknowledge fault | Object 37 | Acknowledge fault | DPT1.001 (switching) | ✓ | | ✓ | | ✓ | Off | On | - | - |
| Status of switching contact | Object 41 | Read status of switching contact | DPT1.001 (switching) | ✓ | ✓ | | ✓ | ✓ | Off | On | - | - |
| Status of PTC heating register | Object 42 | Read status of PTC heating register | DPT1.001 (switching) | ✓ | ✓ | | ✓ | ✓ | Off | On | - | - |
| Status of bypass | Object 43 | Read status of bypass | DPT1.001 (switching) | ✓ | ✓ | | ✓ | ✓ | Off | On | - | - |
| Status of brine EHE (ZP1) | Object 44 | Read status of brine EHE | DPT17.001 (scene) | ✓ | ✓ | | ✓ | ✓ | 1 | 3 | 1 | - |
| Position of zone shutter (ZP1) | Object 45 | Read position of zone shutter | DPT17.001 (scene number) | ✓ | ✓ | | ✓ | ✓ | 1 | 3 | 1 | - |
| Status of 3-way air shutter (ZP1) | Object 46 | Read status of 3-way air shutter | DPT17.001 (scene number) | ✓ | ✓ | | ✓ | ✓ | 1 | 3 | 1 | - |
| Status of supplementary heating (ZP1) | Object 47 | Read status of supplementary heating | DPT1.001 (switching) | ✓ | ✓ | | ✓ | ✓ | Off | On | | - |
| Total operating time | Object 48 | Read operating time of CDV (days) | DPT13.100 (time difference s) | ✓ | ✓ | | ✓ | ✓ | 0 | $2^{31}$ | 1 | s |
| Temperature outside air upstream of | Object 50 | Read outside air temperature upstream of EHE | DPT9.001 (Temperature / °C) | ✓ | ✓ | | ✓ | ✓ | - | - | 0.01 | °C |

| EHE | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Fault code** | Object 112 | Read fault code | DPT16.000 (ASCII characters) | ✓ | ✓ | | ✓ | ✓ | 0 | 22 | 1 | - |
| **Information code 1** | Object 113 | Read information code (information 1) | DPT16.000 (ASCII characters) | ✓ | ✓ | | ✓ | ✓ | 0 | 20 | 1 | - |
| **Information code 2** | Object 114 | Read information code (information 2) | DPT16.000 (ASCII characters) | ✓ | ✓ | | ✓ | ✓ | 0 | 20 | 1 | - |
| **Information code 3** | Object 115 | Read information code (information 3) | DPT16.000 (ASCII characters) | ✓ | ✓ | | ✓ | ✓ | 0 | 20 | 1 | - |

## Communication flags

| Flag | Name | Meaning |
|---|---|---|
| **K** | Communication | Object is capable of communication |
| **L** | Read | Object can be read |
| **S** | Write | Object can receive data |
| **Ü** | Transmit | Object can transmit |
| **A** | Update | Object can transmit read requests |

## Used data types

| Data type | Description | Length |
|---|---|---|
| **DPT1.001** | Switching | 1 bit |
| **DPT7.005** | Time (in seconds) | 2 bytes |
| **DPT7.007** | Time (in hours) | 2 bytes |
| **DTP9.001** | Temperature (°C) | 2 bytes |
| **DPT9.007** | Humidity (%) | 2 bytes |
| **DPT9.008** | Parts/million PPM | 2 bytes |
| **DPT13.100** | Time difference (seconds) | 4 bytes |
| **DPT14.033** | Frequency Hz | 4 bytes |
| **DPT16.000** | Characters (ASCII) | 14 bytes |
| **DPT17.001** | Scene number | 1 byte |

## Assignment tables for KNX objects

| Object 0 / Read operating mode | | | Object 1 / Write operating mode | |
|---|---|---|---|---|
| Scene | Meaning | | Scene | Meaning |

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| number | | | number | |
|---|---|---|---|---|
| 1 | Off | | 1 | Off |
| 2 | Manual | | 2 | Manual |
| 3 | Auto time | | 3 | Auto time |
| 4 | Auto sensor | | 4 | Auto sensor |
| 5 | Eco supply air | | 5 | Eco supply air |
| 6 | Eco exhaust air | | 6 | Eco exhaust air |

| Object 2 / Read season | | | Object 3 / Write season | |
|---|---|---|---|---|
| Value | Meaning | | Value | Meaning |
| Off | Winter | | Off | Winter |
| On | Summer | | On | Summer |

| Object 4 / Read ventilation level | | | Object 5 / Write ventilation level | |
|---|---|---|---|---|
| Scene number | Meaning | | Scene number | Meaning |
| 1 | Off | | 1 | Off |
| 2 | Humidity protection ventilation | | 2 | Humidity protection ventilation |
| 3 | Reduced ventilation | | 3 | Reduced ventilation |
| 4 | Nominal ventilation | | 4 | Nominal ventilation |
| 5 | Intensive ventilation | | 5 | Intensive ventilation |

| Object 6 / Read intermittent ventilation | | | Object 7 / Write intermittent ventilation | |
|---|---|---|---|---|
| Value | Meaning | | Value | Meaning |
| Off | Intermittent ventilation inactive | | Off | Intermittent ventilation deactivated |
| On | Intermittent ventilation active | | On | Activate intermittent ventilation |

| Object 41 / Status of switching contact | | | Object 42 / Status of PTC heat register | |
|---|---|---|---|---|
| Value | Meaning | | Value | Meaning |
| Off | Contact inactive | | Off | Bypass inactive |
| On | Contact active | | On | Bypass active |

| Object 43 / Status of PTC heat register | |
|---|---|
| Value | Meaning |
| Off | PTC heat register inactive |
| On | PTC heat register active |

| Object 41 / Status of brine EHE (ZP1 additional circuit board) | | | Object 42 / Status of zone shutter (ZP1) | |
|---|---|---|---|---|
| Scene number | Meaning | | Scene number | Meaning |
| 1 | Brine EHE inactive | | 1 | Middle position of shutter |
| 2 | Heat brine EHE | | 2 | Shutter: zone 1 |
| 3 | Cool brine EHE | | 3 | Shutter: zone 2 |

| Object 43 / Status of 3-way air shutter (ZP1) | | | Object 44 / Status of supplementary heating (ZP1) | |
|---|---|---|---|---|
| Scene number | Meaning | | Value | Meaning |
| 0 | Air shutter inactive | | 0 | Supplementary heating inactive |
| 1 | Air shutter heating | | 1 | Supplementary heating active |
| 2 | Air shutter cooling | | | |

| Object 112 / Read fault code | | | | Object 113, 114, 115 / Read information code | |
|---|---|---|---|---|---|
| Value | Meaning | Acknowledgement possible | | Value | Meaning |
| 0 | No error | | | 0 | No information active |
| 1 | Supply air fan | yes | | 1 | Brine EHE, low cooling capacity |
| 2 | Exhaust air fan | yes | | 2 | Communication: EnOcean |
| 3 | Sensor: T-air inlet, unit | no | | 3 | - |
| 4 | Sensor: T-supply air | no | | 4 | Communication: internet |
| 5 | Sensor: T-outgoing air | no | | 5 | Bypass active |
| 6 | Sensor: T-room control unit | no | | 6 | Zone ventilation active |
| 7 | Sensor: T-room external | no | | 7 | Frost protection active |
| 8 | Sensor: T-outside air upstream of EHE | no | | 8 | Frost protection, volumetric flow regulation |
| 9 | Bypass | no | | 9 | Key lock active |
| 10 | Zone shutter | no | | 10 | Filter message: unit |
| 11 | Combination sensor, exhaust air | no | | 11 | Filter message: external filter |
| 12 | Frost protection | no | | 12 | Filter message: room filter |
| 13 | External pre-heating | yes | | 13 | Volumetric flow, |

| | | | | | |
|---|---|---|---|---|---|
| | | | | | measurement active |
| 14 | Supply air temperature too cold | no | | 14 | Max. humidity value limit exceeded |
| 15 | Exhaust air temperature too cold | no | | 15 | Reheating active |
| 16 | Sensor: T-room bus | no | | 16 | Furnace pressure monitor triggered |
| 17 | Additional circuit board 1 | no | | 17 | External safety shutdown |
| 18 | Additional circuit board 2 | no | | 18 | Forced operation active |
| 19 | Pressure consistency setpoint not reached | yes | | 19 | Communication: ModBus |
| 20 | Communication: comfort control unit | no | | 20 | Switching test active |
| 21 | System memory | yes | | | |
| 22 | System bus | no | | | |
| 23 | Unknown error | yes | | | |

## Configuring the transmission intervals

The transmission intervals of the individual communication objects can be defined in the ETS software. The setting range for the transmission intervals is between 1 and 30 minutes. For example, if a value of 5 is set for the communication object operating mode, the communication object transmits the current object value to the KNX bus every 5 minutes regardless of whether the value has changed or not. A value of 0 deactivates the communication object's interval-controlled transmission function. At the same time, a transmission function is activated should the status of the object value change. The object value is thereby only written to the KNX bus if it changes. Figure 1 shows the window for configuring the transmission intervals of communication objects in the ETS software.

**Figure 2: Configuring the transmission intervals**