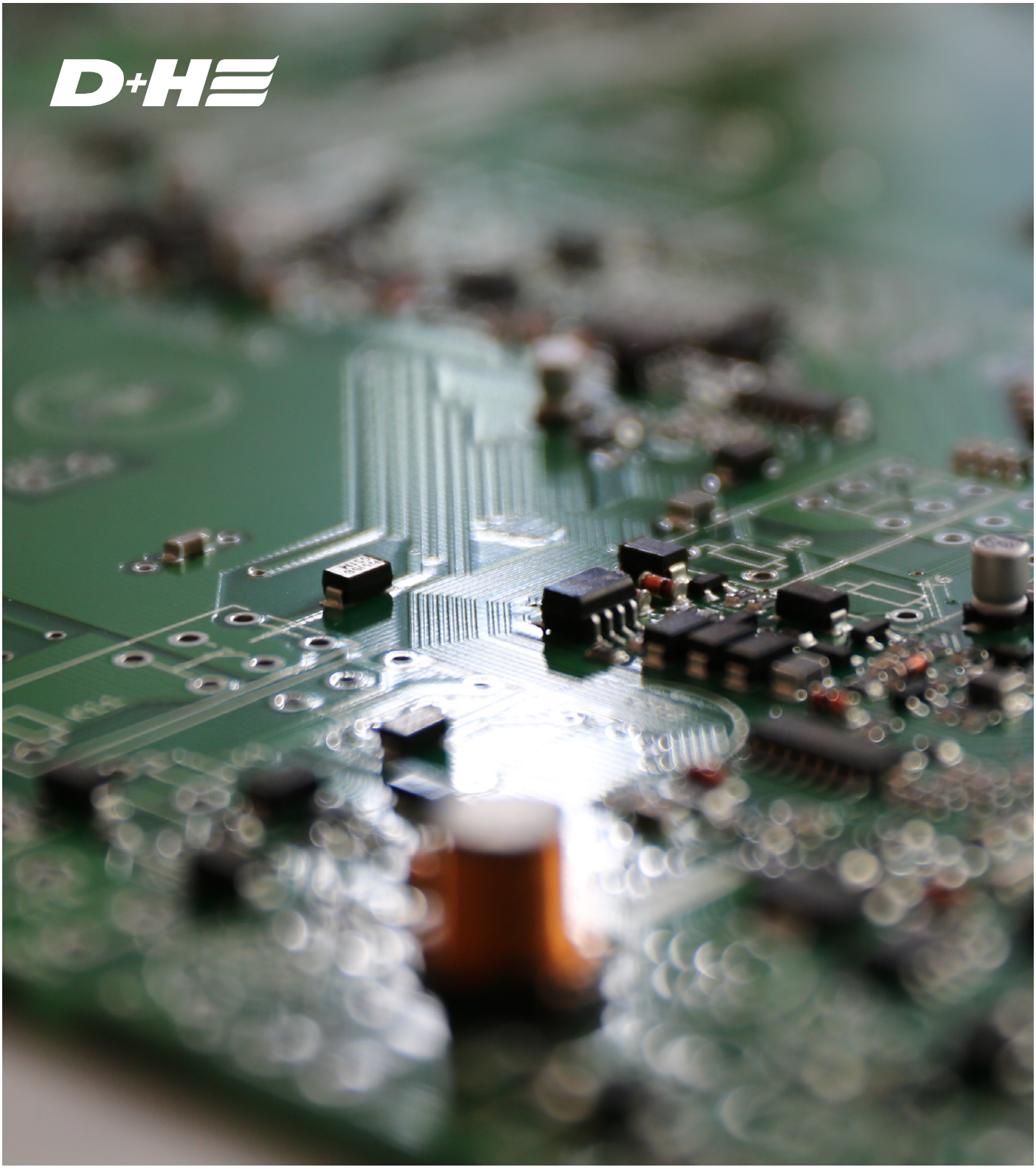


KNX MODBUS + RTU GATEWAY

Direct connection of D+H ACB drives via KNX

DIRECT CONNECTION OF D+H ACB DRIVES VIA KNX

Intro

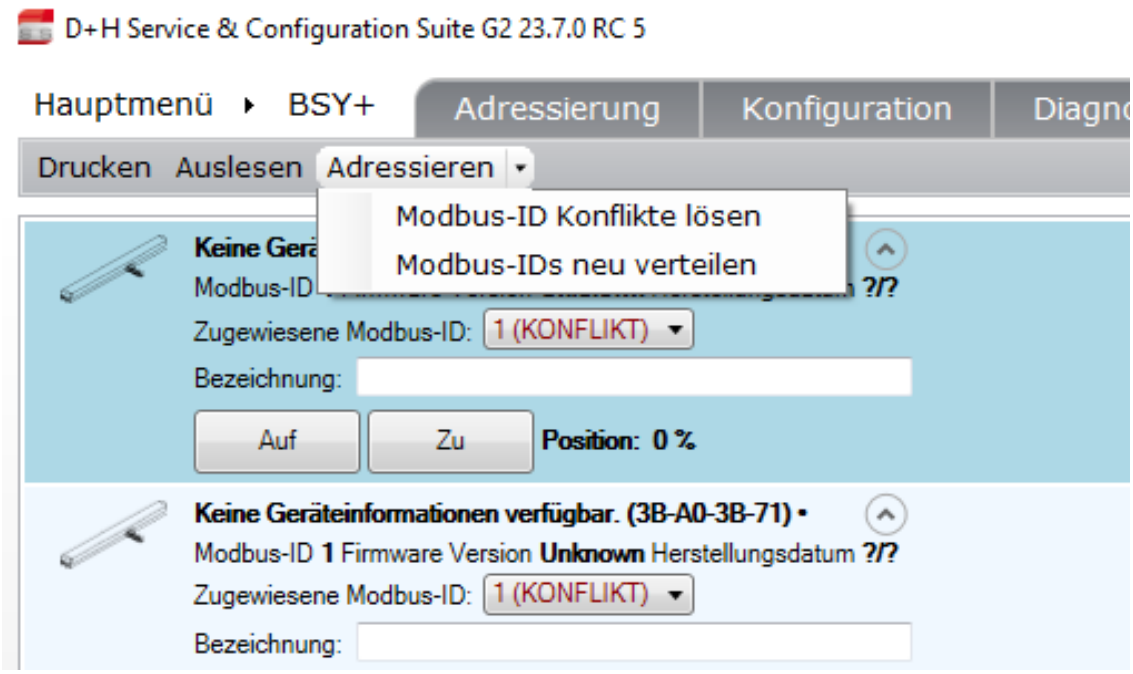
KNX connection of D+H drives with ACB technology

D+H drives with ACB technology can be directly connected to KNX via the KNX Modbus RTU gateway. The great advantage of D+H ACB drives is that they have separate bus interfaces for communication between the operation and drives and for synchronization of drives.
The drives have a BSY+ interface for synchronization and the ACB interface for communication between the operation and drives. The ACB interface is based on Modbus RTU, which is a widely used bus standard in building automation. This makes it possible to control up to 25 drives with a KNX Modbus RTU gateway, which can consist of single drives as well as synchronous groups including locking drives. Each synchronous group is then regarded as a unit belonging to a window, which can be controlled and read out individually via a shared Modbus cable.

Instruction

Addressing and testing via ACB or Modbus RTU

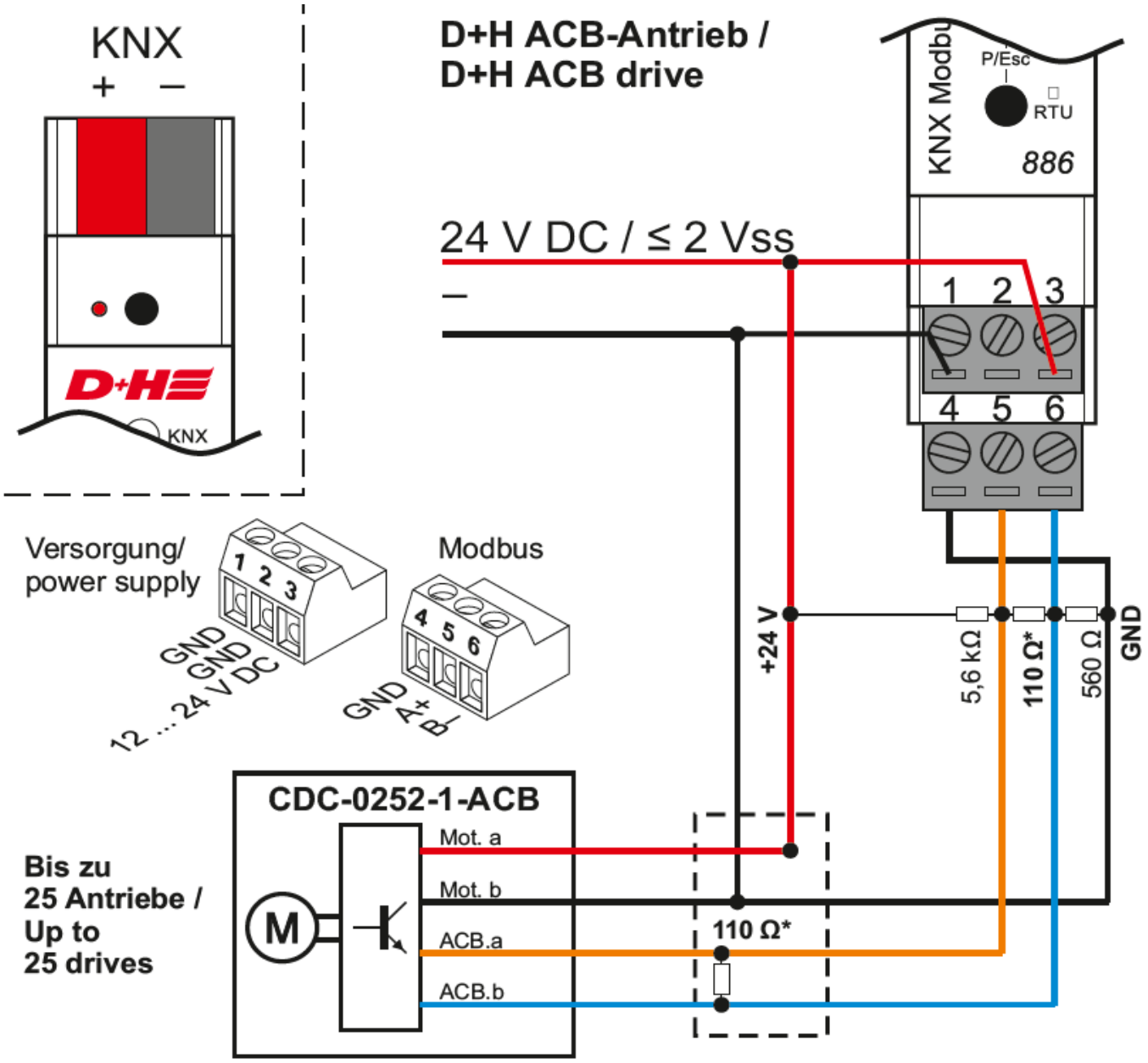
In order for the drive groups to be controlled individually, they must first be given their own address or Modbus ID. This can be easily automated using the new “Modbus addressing” tool in the SCS.



The tool can also be used to easily test the drives and the bus line before they are connected to a Modbus controller or, as in this case, to the KNX Modbus gateway. The use of the tool is described in detail in the document “Modbus addressing of D+H drives with ACB technology”.

Connection of the KNX Modbus RTU gateway

The bus lines are connected to the KNX Modbus RTU gateway as follows.



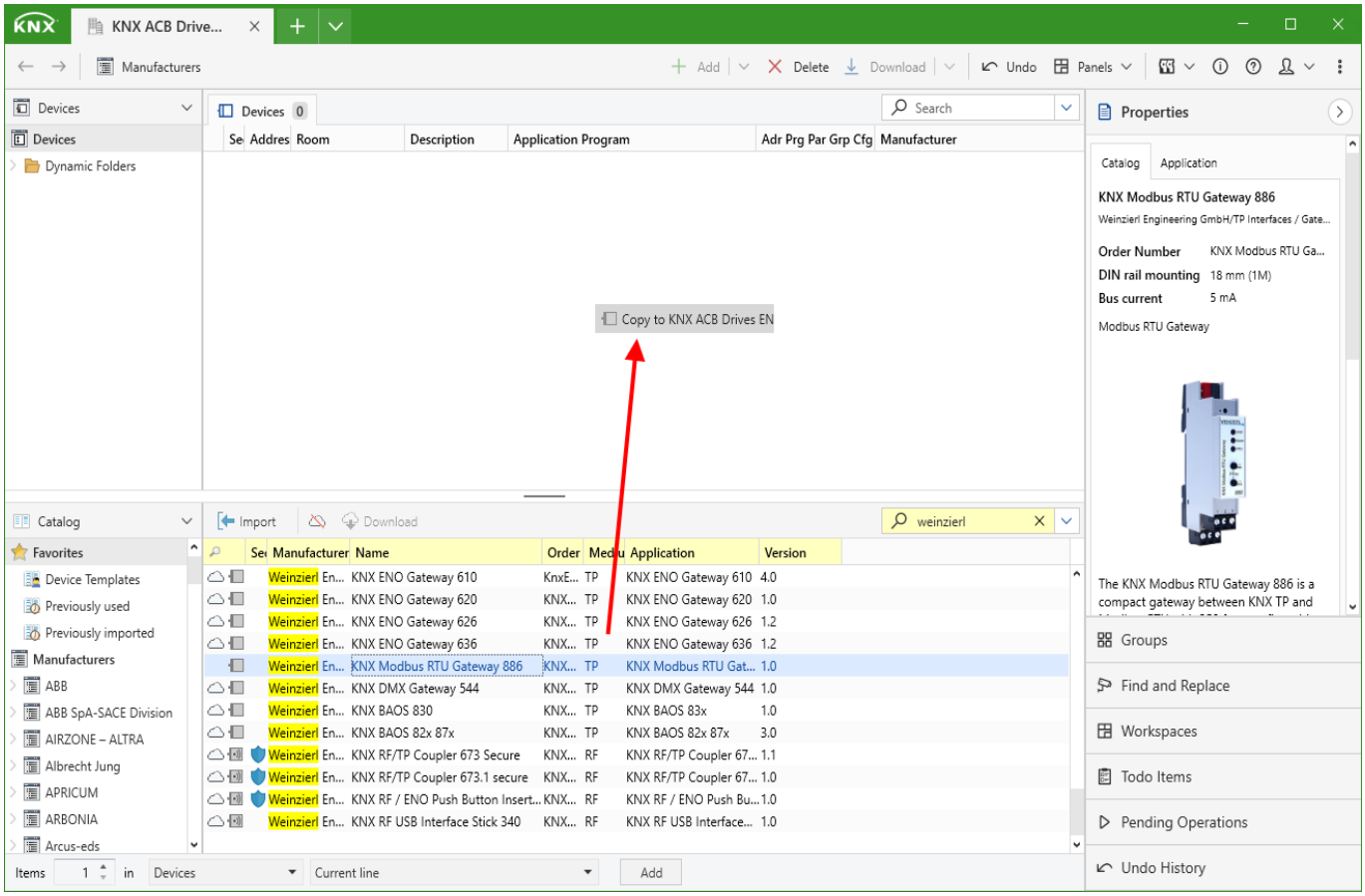
Further information on the connection of the KNX Modbus RTU Gateway can be found in the instructions for use.

Configuration KNX Modbus RTU Gateway

The KNX Modbus RTU gateway is configured directly via KNX using the ETS configuration software.

KNX configuration software ETS

In order to use the KNX Modbus gateway, it must be integrated into an ETS project. To do this, search for Weinzierl in the catalog and select the KNX Modbus RTU Gateway 886. This is then added to the project by dragging it into the list of devices.

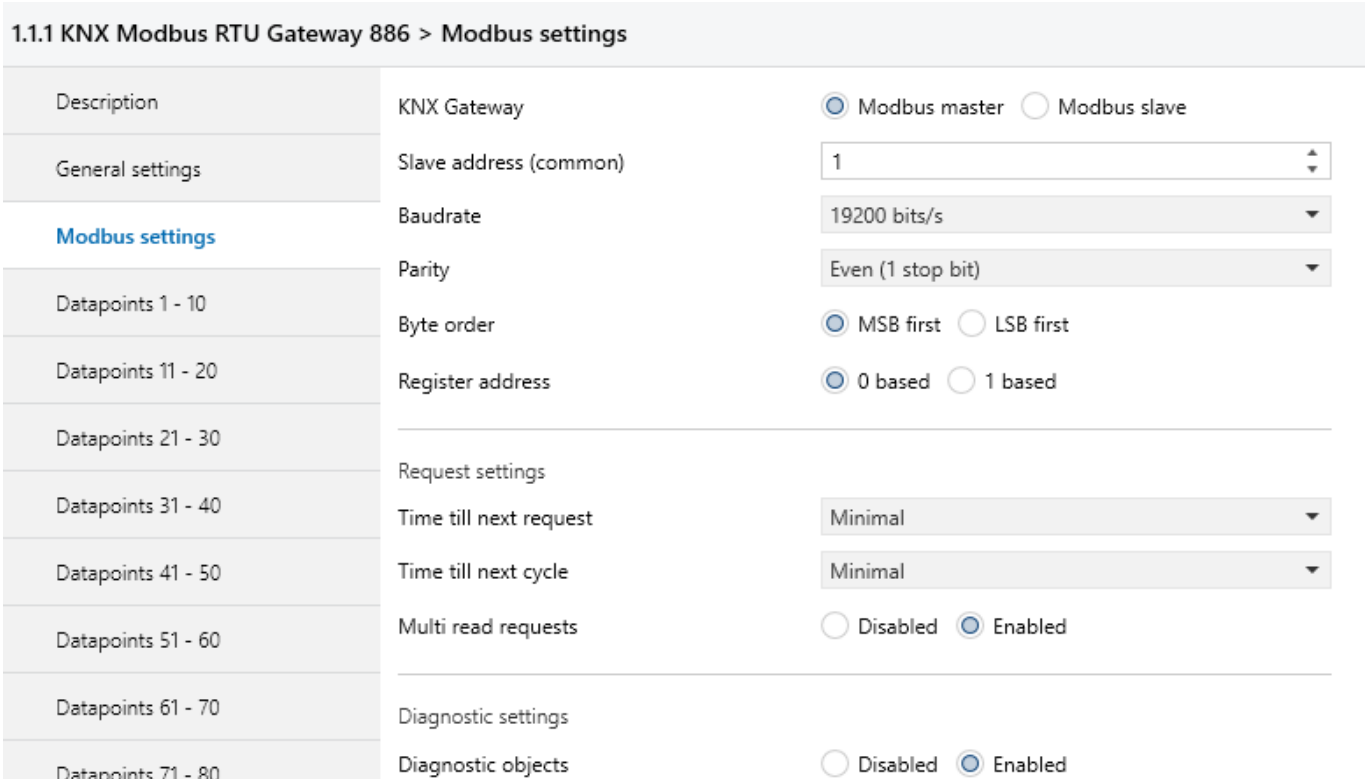


Configuring data points

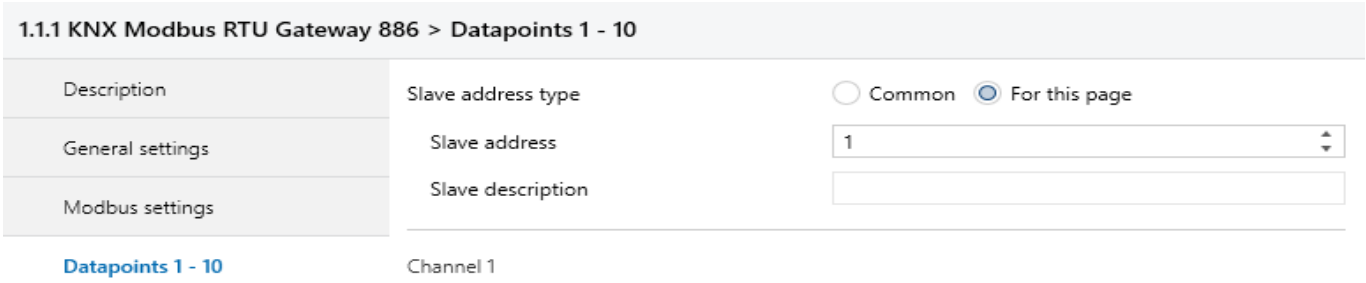
In order to be able to access and control the drive information from KNX, the required data points must be created in the KNX Modbus RTU Gateway.

This can be done manually via the Parameters tab or by importing a template file. Most of the Modbus settings are already suitable for ACB. The “Multi read requests” parameter can speed up communication if several data points are read in directly one after the other.

The following section first shows typical settings for data points that are useful for ACB drives. Then the section on template files shows how the data points for several drives can be generated without having to create each one individually by hand.

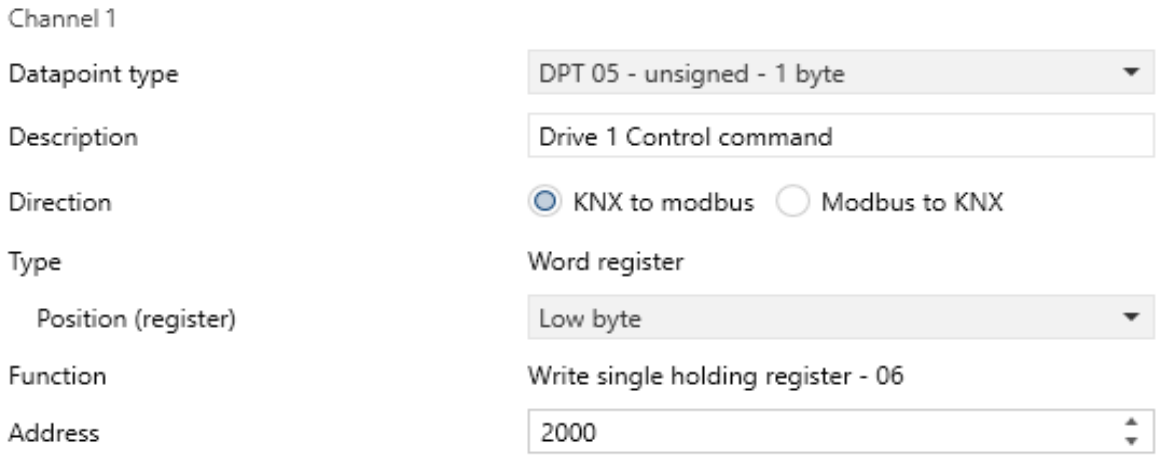


There are always 10 data points combined in one tab, which are assigned to a common Modbus ID (slave address). There are 25 of these tabs, which means that a maximum of 25 different Modbus devices can be addressed by the KNX modbus RTU gateway. Therefore, a maximum of 25 ACB drives can be controlled on one bus.



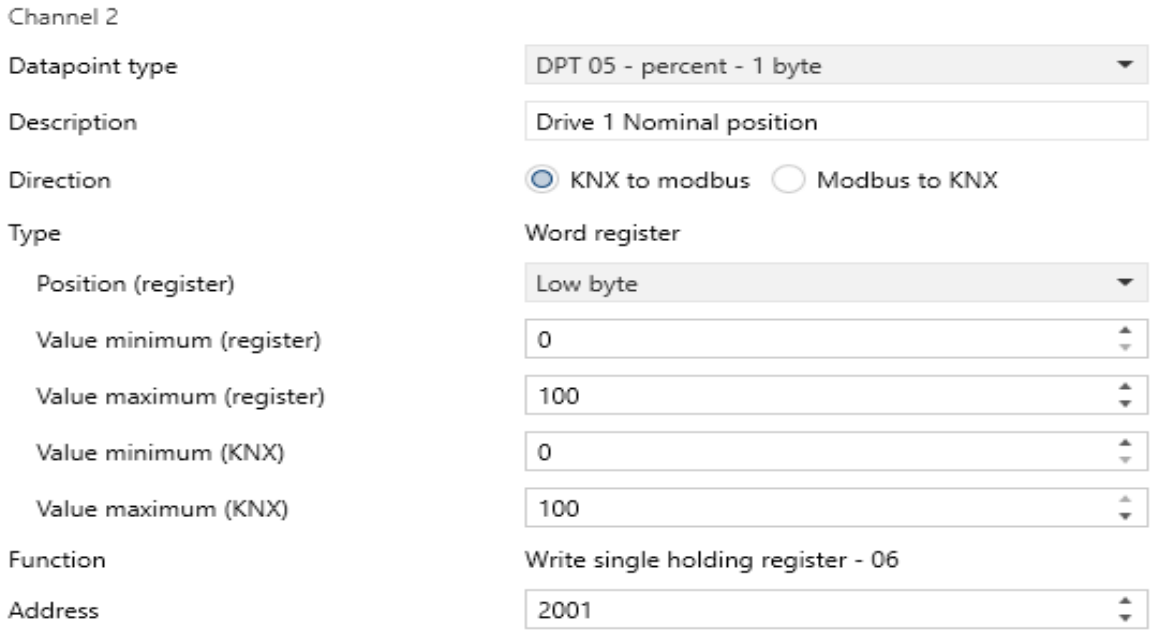
For each piece of information that is to be read or written, a data point is assigned to a register of the Modbus device. The registers available in the ACB drives are listed in the ACB planning manual. For direct control via Modbus, it is recommended to use the registers in the “Simple” Input Register and “Simple” Holding Register areas.
The most frequently used data points with useful settings are listed below.

Target control command
Stop: 0
CLOSED: 1
OPEN: 2
Ventilation position: 6
Nothing (without change): 31



Target position
Unit: %
Resolution: 1% steps
CLOSED position: 0
OPEN position: 100

The target position is created in KNX as a 1-byte percentage value. Attention, for KNX devices that do not directly support the data type “DTP 05 - percentage value - 1 byte”, but only generally “DTP 05 byte value”, the value 255 must be sent for 100%. KNX internally maps the range 0-100% as 0-255 in the value “DTP 05 - percentage value - 1 byte”.



Speed
Unit: 1/10 mm/s
If the value = 0, the standard speed of the drive is used.
Value range: 45 to 70* (Louvre drives 5 to 20*)
*excluding closing range 1

Channel 3

Datapoint type	DPT 05 - unsigned - 1 byte
Description	Drive 1 Target speed
Direction	(•) KNX to modbus ( ) Modbus to KNX
Type	Word register
Position (register)	Low byte
Function	Write single holding register - 06
Address	2002

Actual position
Unit: %
Resolution: 1% steps
CLOSED position: 0
OPEN position: 100

Channel 4

Datapoint type	DPT 05 - percent - 1 byte
Description	Drive 1 Actual position
Direction	( ) KNX to modbus (•) Modbus to KNX
Send condition	On change
Type	Word register
Position (register)	High/Low byte
Value minimum (register)	0
Value maximum (register)	100
Value minimum (KNX)	0
Value maximum (KNX)	100
Function	( ) Read holding registers - 03 (•) Read input registers - 04
Address	1002
Polling interval	Every cycle

End position OPEN
Not end position OPEN: 0
End position OPEN: 1

Channel 5

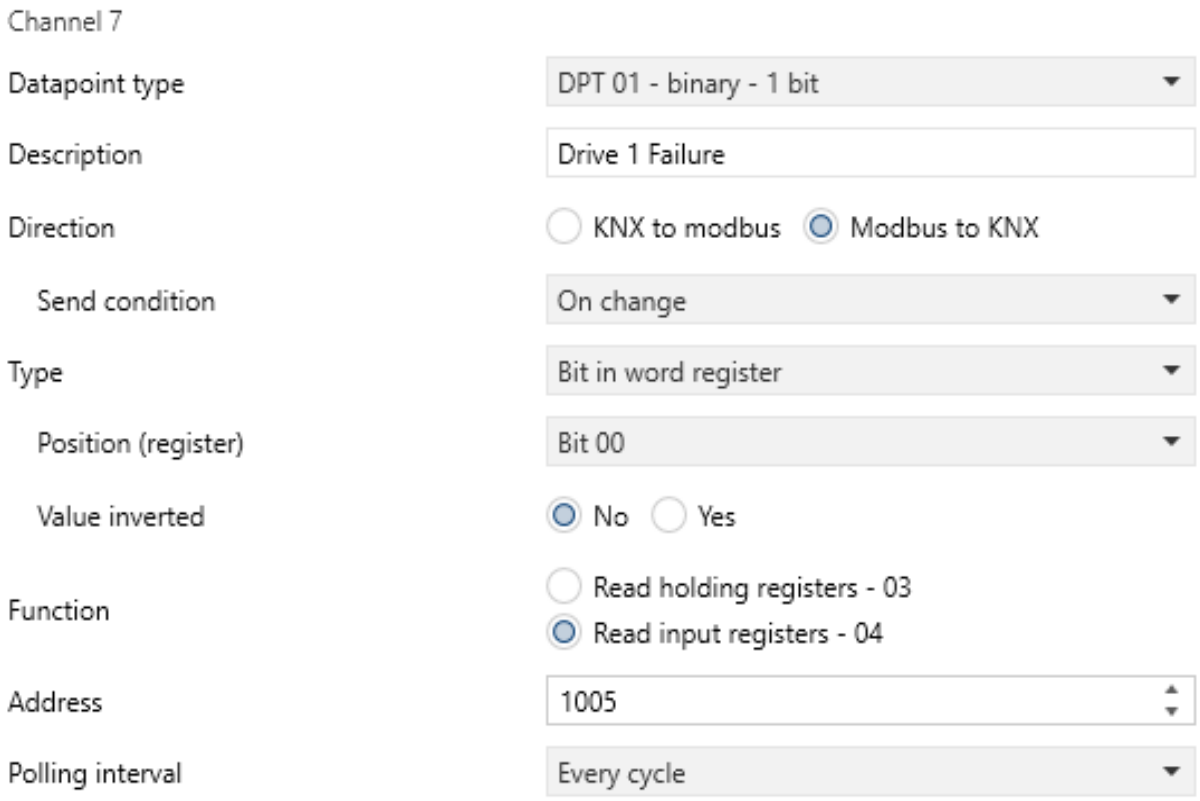
Datapoint type	DPT 01 - binary - 1 bit
Description	Drive 1 End position OPEN
Direction	○ KNX to modbus ◉ Modbus to KNX
Send condition	On change
Type	Bit in word register
Position (register)	Bit 00
Value inverted	◉ No ○ Yes
Function	○ Read holding registers - 03 ◉ Read input registers - 04
Address	1003
Polling interval	Every cycle

End position CLOSED
Not end position CLOSED: 0
End position CLOSED: 1

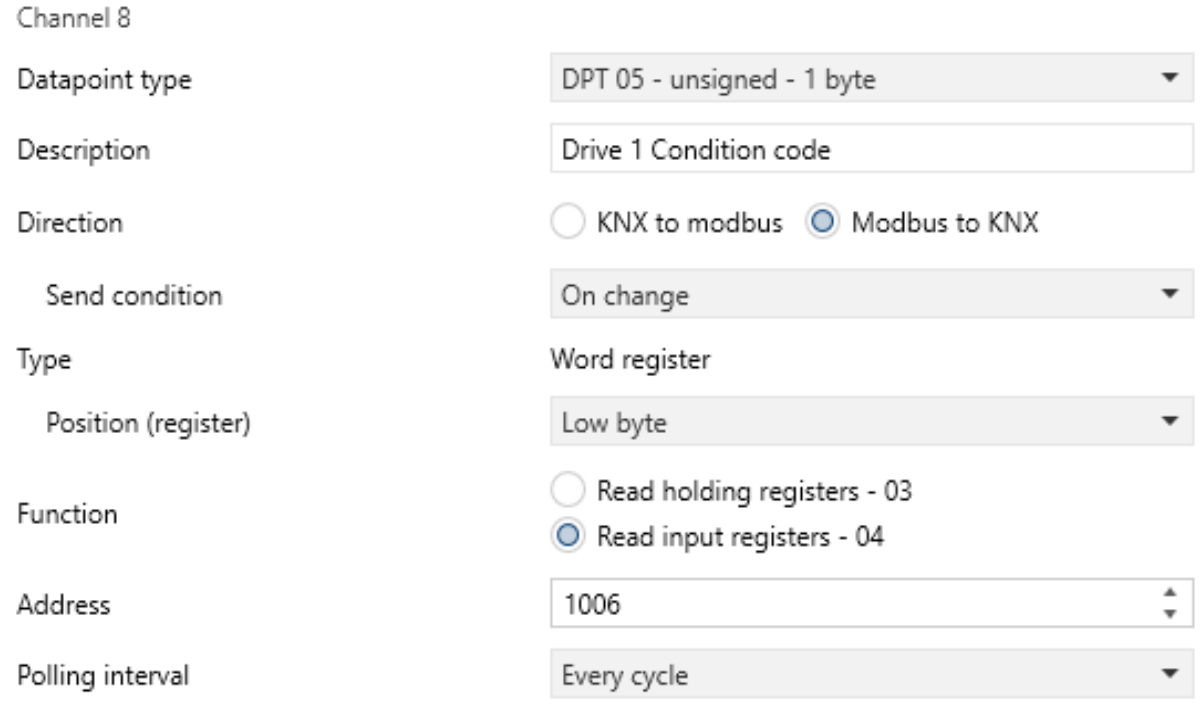
Channel 6

Datapoint type	DPT 01 - binary - 1 bit
Description	Drive 1 End position CLOSED
Direction	○ KNX to modbus ◉ Modbus to KNX
Send condition	On change
Type	Bit in word register
Position (register)	Bit 00
Value inverted	◉ No ○ Yes
Function	○ Read holding registers - 03 ◉ Read input registers - 04
Address	1004
Polling interval	Every cycle

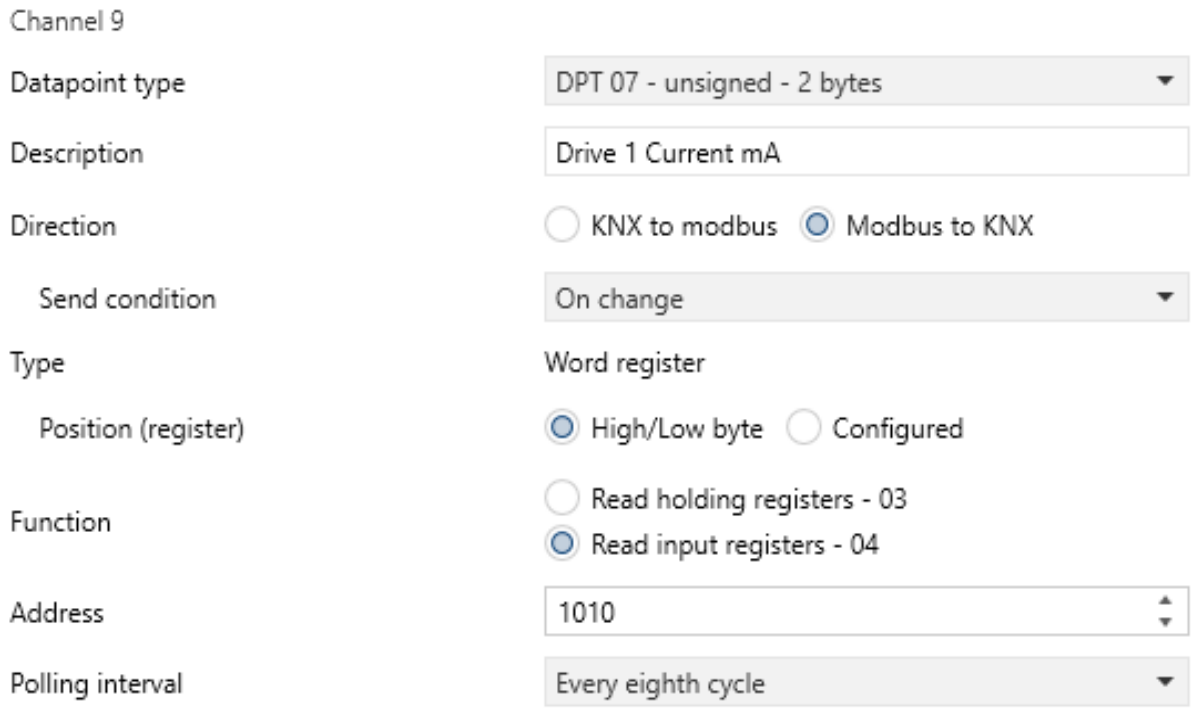
Error
This value is used to report if the drive has an error or fault, such as a motor overload



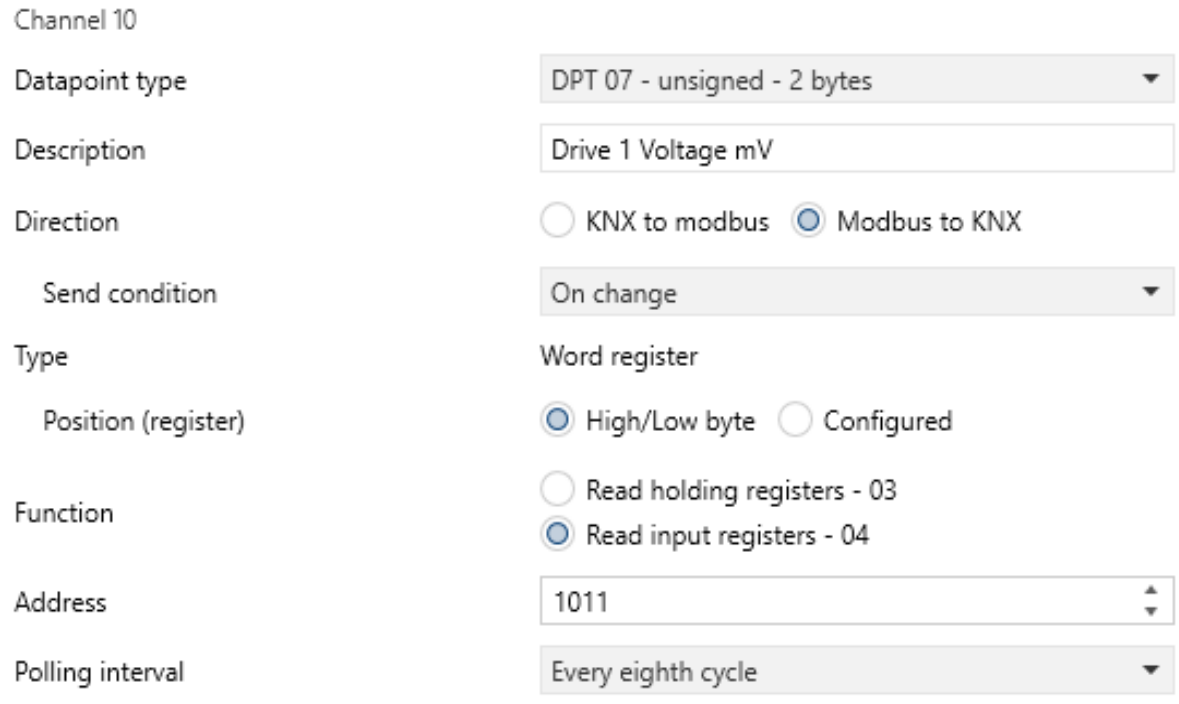
Status code
The status code is used to report the current status of the drive. In the event of an error, the reason for the error is reported here. The possible status codes are listed in the ACB planning manual.



Current
Unit: OPEN signal (±50 mA)
Current of the entire opening drive group without lock drives



Voltage
Unit: mV
Voltage measured at the drive



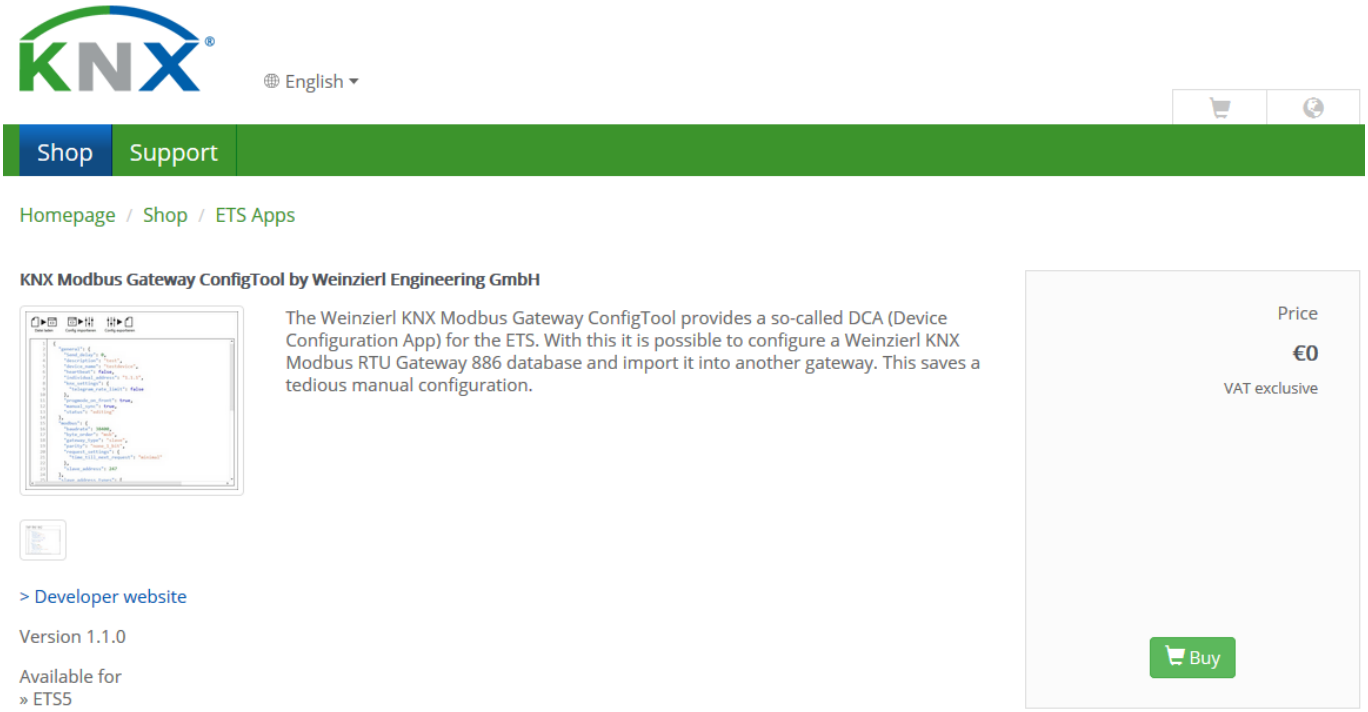
Templates

The gateway can control up to 25 ACB drives with up to 10 data points each. Creating all 250 data points manually is very time-consuming. To make this process easier, we provide template files that can be imported into the ETS.

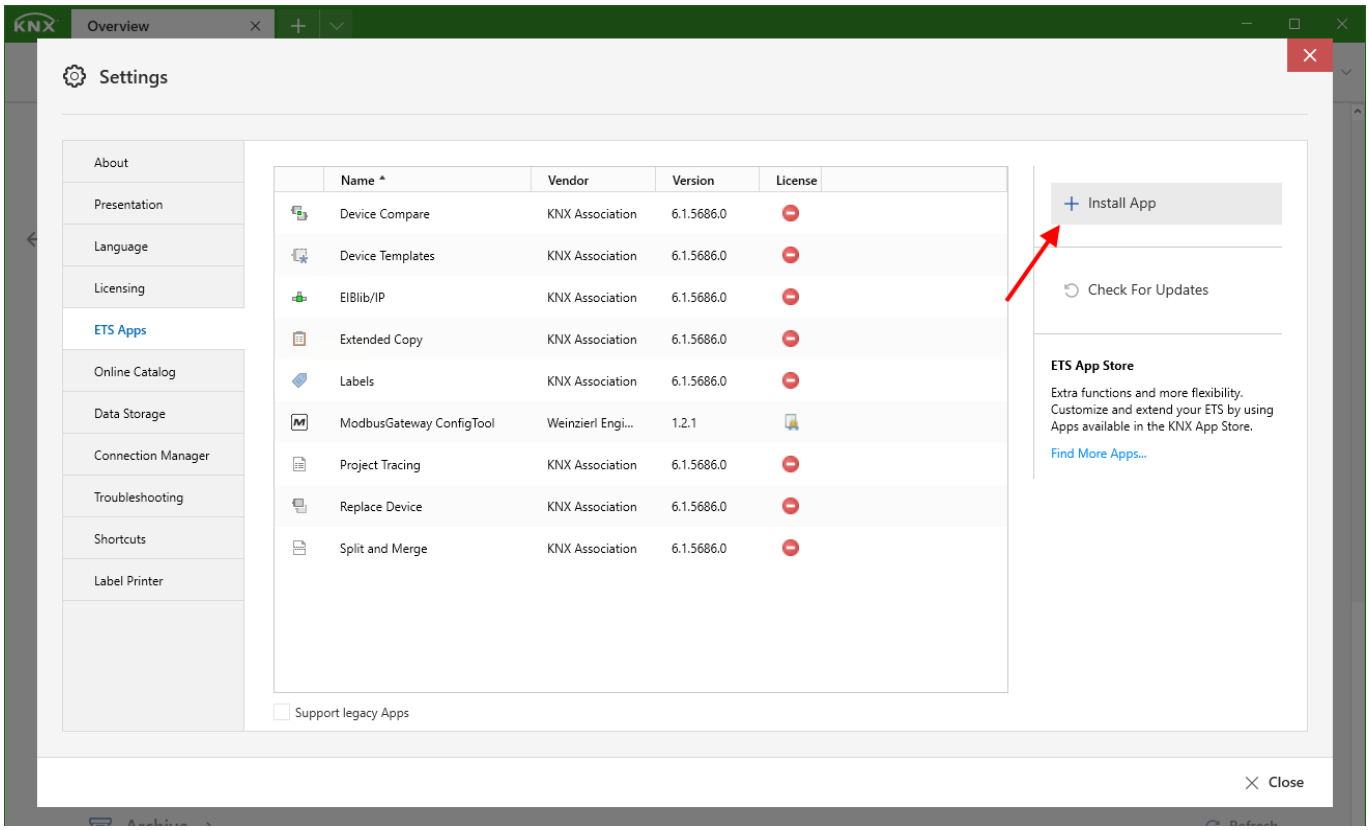
If data points other than those shown here are required, customized template files can be created with the help of a small tool, which is also available on request.

ETS Gerätekonfigurations-App installieren

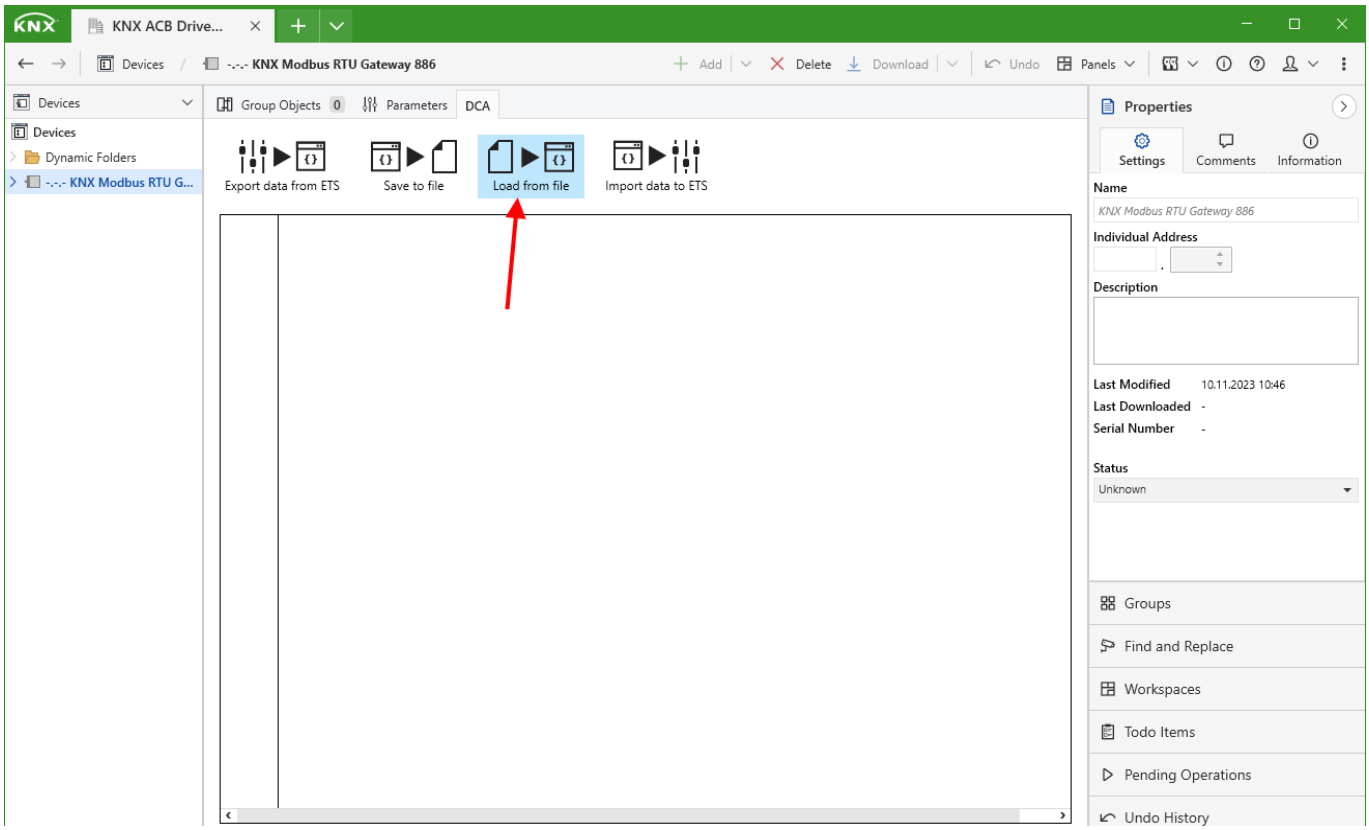
An ETS app (DCA) must be installed for the import. This can be purchased free of charge from the KNX Shop my.knx.org/en/shop.



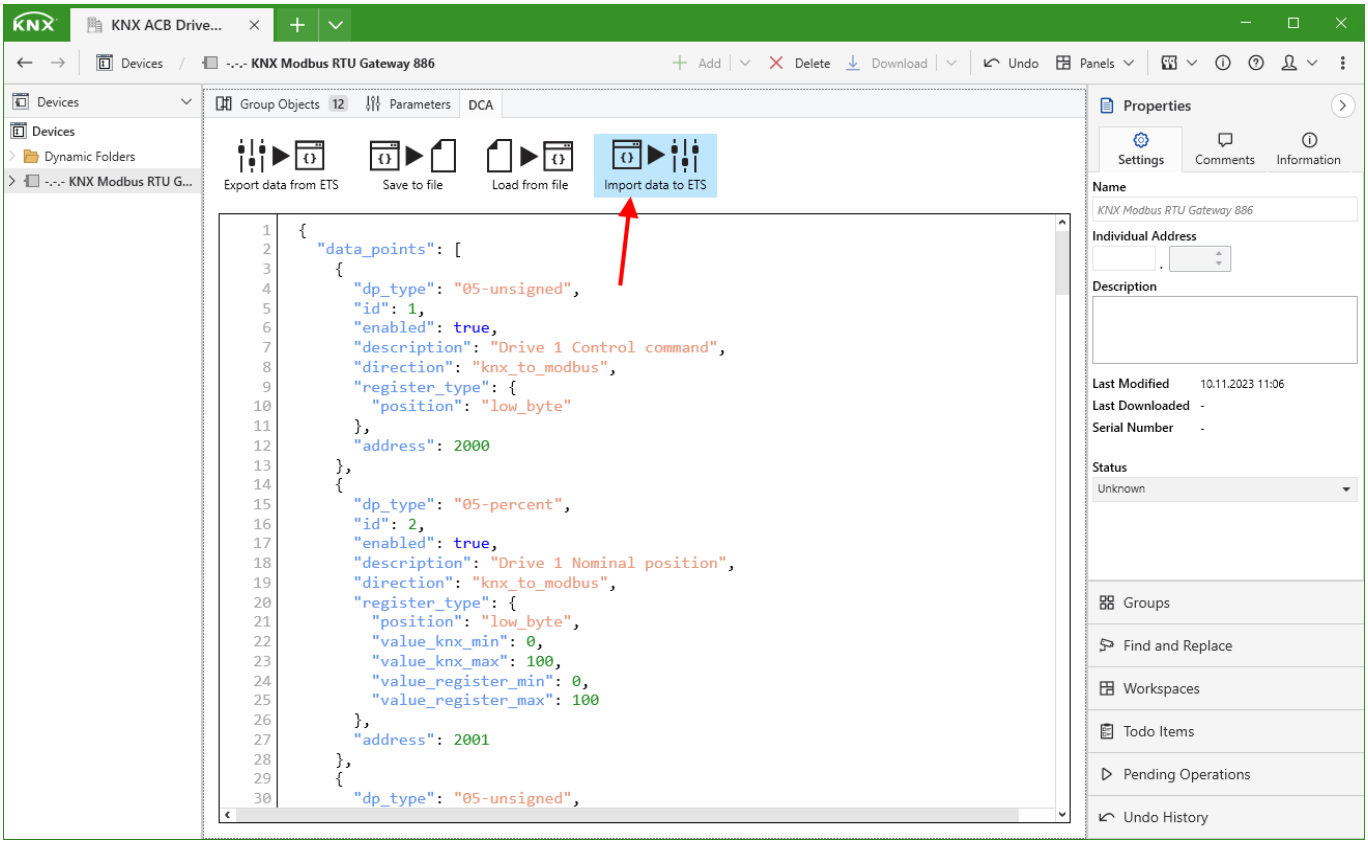
The ETS app (DCA) can be installed via Settings -> ETS Apps



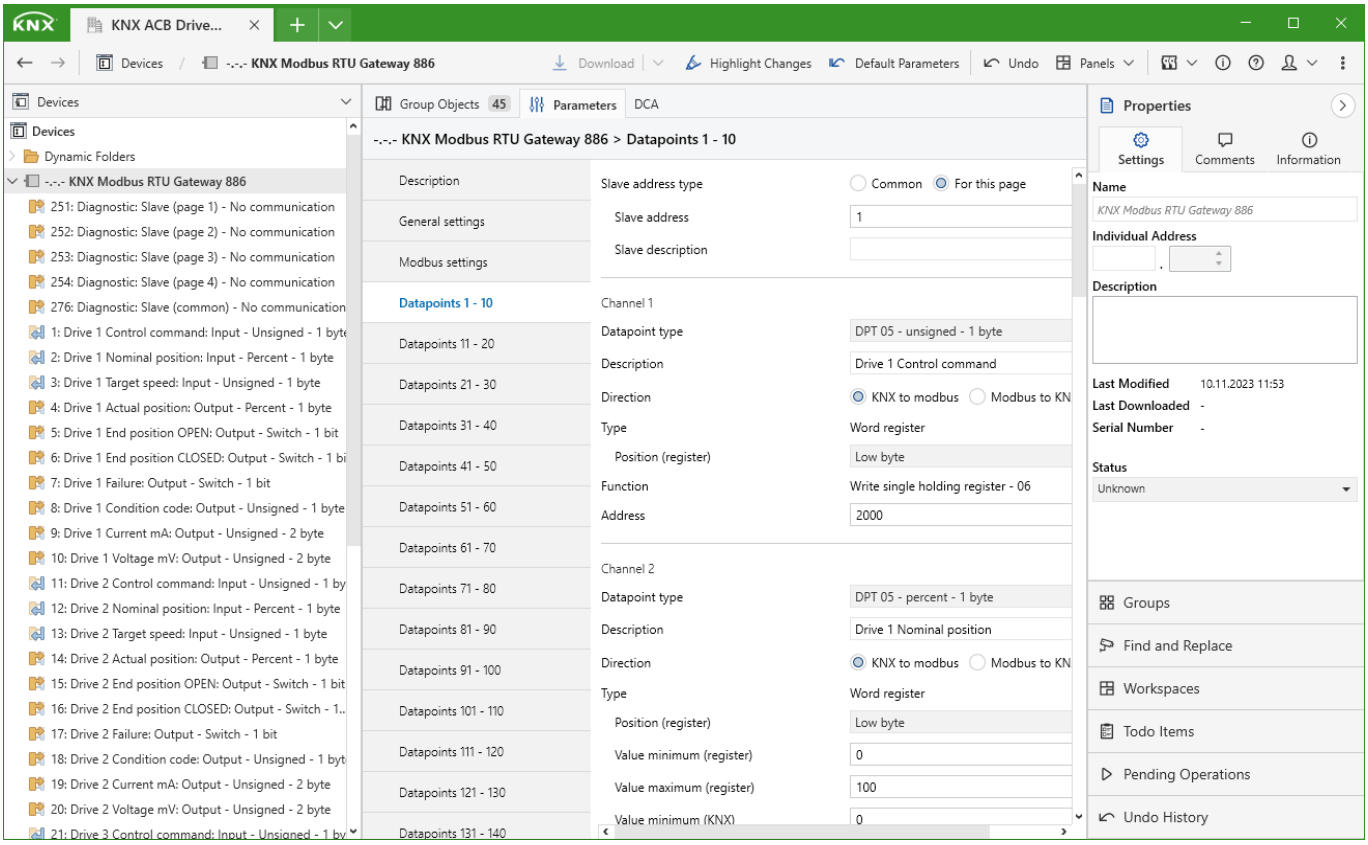
If the ETS app (DCA) is installed, a DCA tab appears on the KNX Modbus RTU Gateway 886 device. The template file can be loaded on this tab.



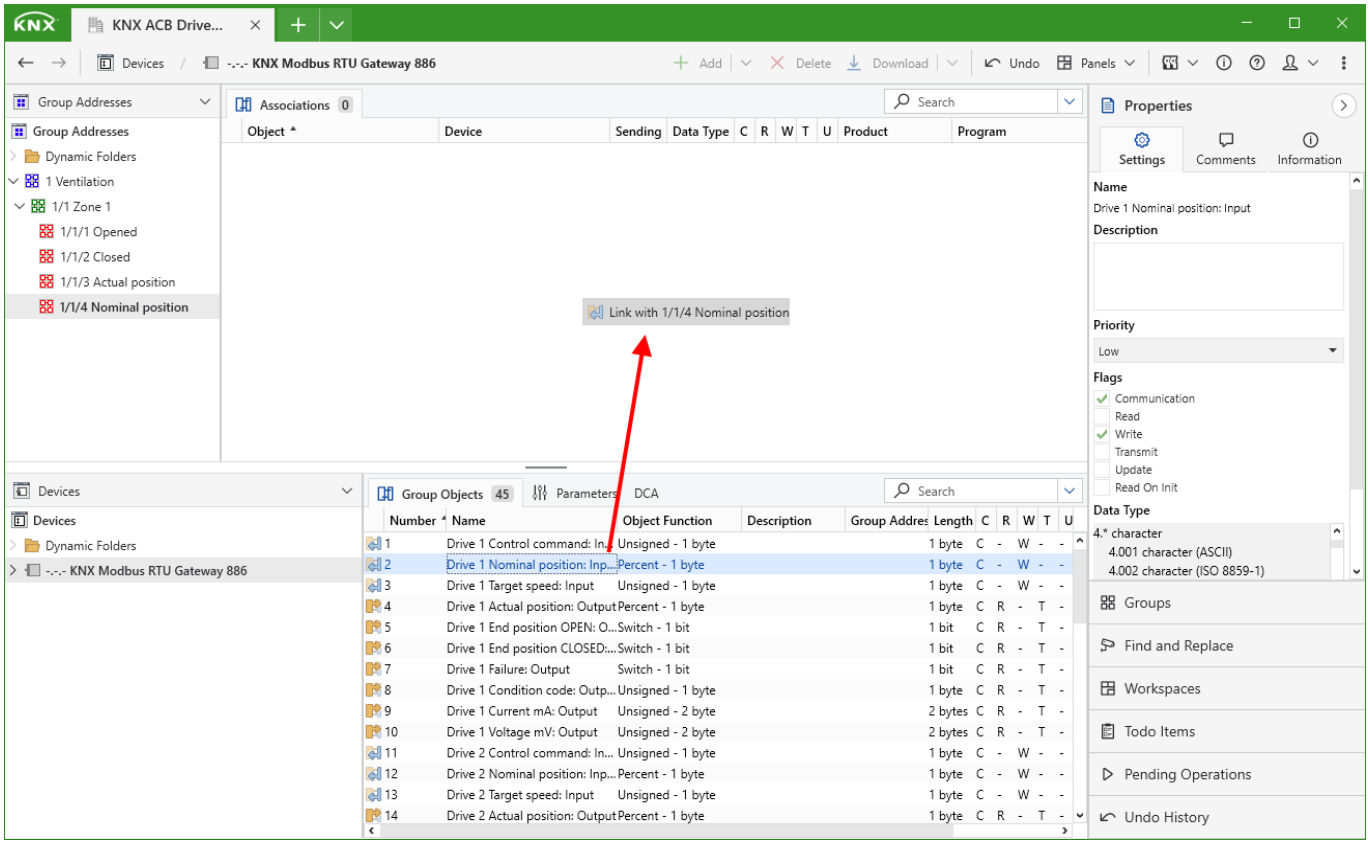
Once the file has been loaded, the Configuration can be imported by clicking on the “Import data into ETS” button.



With the import, the general and Modbus settings as well as the data points matching the AdComNet drives are automatically transferred correctly.



KNX group addresses can now be added to the data points created.



ACB Planning Manual

Further information on the direct operation of D+H drives with ACB technology via Modbus RTU can be found in the ACB planning manual. This can be downloaded **here**.

D+H
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