

+ 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.

置 D+H Servi	ce & Configurat	ion Suite G2 23.7.0 RC 5		
Hauptmer	nü → BSY+	Adressierung	Konfiguration	Diagno
Drucken /	Auslesen Adr	essieren 🔹		
	Keine Gerä Modbus-ID	Modbus-ID Konflikte k Modbus-IDs neu verte	ilen	
-	Zugewiesene Mo	odbus-ID: 1 (KONFLIKT) 🔻		
	Bezeichnung:			
	Auf	Zu Position: 0 %		
J.	Keine Geräteinf Modbus-ID 1 Fin Zugewiesene Mo	formationen verfügbar. (3B-A0 mware Version Unknown Hers odbus-ID: 1 (KONFLIKT) •	H3B-71) • 💉 tellungsdatum ?/?	
	bezeichnung:			

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.

KNX MCB Driv	ve × + ~						- o x
$\leftarrow \rightarrow$ \blacksquare Manufacturers	5		+ Add \sim	$ imes$ Delete $ extsf{}$	Download 🗸 🖌 🗠 Undo	EB P	anels 🗸 🖾 🗸 🛈 🕐 🗘 🗸 🗄
🖸 Devices 🗸 🗸	Devices 0				𝒫 Search	~	Properties >
E Devices	Se Addres Room	Description Application Pr	rogram	Adr Prg Par Grp Cfg	Manufacturer		•
> bynamic Folders			Copy to KNX ACB Drives	EN			Catalog Application KNX Modbus RTU Gateway 886 Weinzierl Engineering GmbH/TP Interfaces / Gate Order Number KNX Modbus RTU Ga DIN rail mounting 18 mm (1M) Bus current 5 mA Modbus RTU Gateway
Catalog V	[Import 🖄 🖓 Downlo	ad				< ~	050
Favorites	P See Manufacturer Name	Order I	Mediu Application	Version		^	
Device lemplates	Weinzier En KNX ENO	Gateway 620 KNX T	P KNX ENO Gateway 610 P KNX ENO Gateway 620	1.0			The KNX Modbus RTU Gateway 886 is a
Previously used	☐ Weinzierl En KNX ENO	Gateway 626 KNX T	P KNX ENO Gateway 626	1.2			compact gateway between Kivx IP and
Previously imported	☐ · ■ Weinzier En KNX ENO	Gateway 636 KNX T	P KNX ENO Gateway 636	1.2			Hand Groups
Manufacturers	· Weinzierl En KNX Mod	bus RTU Gateway 886 KNX T	P KNX Modbus RTU Gat	1.0			
> 🔳 ABB	🛆 🗐 🛛 Weinzierl En KNX DMX	Gateway 544 KNX T	P KNX DMX Gateway 544	1.0			☞ Find and Replace
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Albrecht Jung	🛆 🔟 🛑 Weinzierl En KNX RF/T	P Coupler 673 Secure KNX R	F KNX RF/TP Coupler 67	1.1			
	🛆 💷 🛡 Weinzierl En KNX RF/T	P Coupler 673.1 secure KNX R	F KNX RF/TP Coupler 67	1.0			📰 Todo Items
	Weinzieri En KNX RF / Weinzieri En KNX RF /	ENO Push Button Insert KNX R SB Interface Stick 340 KNX R	F KNX RF / ENO Push Bu KNX RF USB Interface	1.0			Pending Operations
Items 1 + in Devices	✓ Current line	•	Add			v	い Undo History

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.

Description	KNX Gateway	Modbus master Modbus slave	
General settings	Slave address (common)	1	* *
Modbus settings	Baudrate	19200 bits/s	•
	Parity	Even (1 stop bit)	-
Datapoints 1 - 10	Byte order	O MSB first LSB first	
Datapoints 11 - 20	Register address	◎ 0 based ○ 1 based	
Datapoints 21 - 30			
	Request settings		
Datapoints 31 - 40	Time till next request	Minimal	•
Datapoints 41 - 50	Time till next cycle	Minimal	•
Datapoints 51 - 60	Multi read requests	O Disabled O Enabled	
Datapoints 61 - 70	Diagnostic settings		
Datapoints 71 - 80	Diagnostic objects	 Disabled Enabled 	

1.1.1 KNX Modbus RTU Gateway 886 > Modbus settings

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.

1.1.1 KNX Modbus RTU Gateway 886 > Datapoints 1 - 10				
Description	Slave address type	O Common O For this page		
General settings	Slave address	1	* *	
Modbus settings	Slave description			
Datapoints 1 - 10	Channel 1			

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

Channel 1		
Datapoint type	DPT 05 - unsigned - 1 byte	•
Description	Drive 1 Control command	
Direction	KNX to modbus O Modbus to KNX	
Туре	Word register	
Position (register)	Low byte	•
Function	Write single holding register - 06	
Address	2000	* *

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".

Channel 2	
Datapoint type	DPT 05 - percent - 1 byte 🔹
Description	Drive 1 Nominal position
Direction	KNX to modbus O Modbus to KNX
Туре	Word register
Position (register)	Low byte 🔹
Value minimum (register)	0
Value maximum (register)	100 ‡
Value minimum (KNX)	0
Value maximum (KNX)	100 🗘
Function	Write single holding register - 06
Address	2001

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

Channel 5		
Datapoint type	DPT 05 - unsigned - 1 byte	•
Description	Drive 1 Target speed	
Direction	KNX to modbus O Modbus to KNX	
Туре	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	
Send condition	On change	•
Туре	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

End position OPEN

Not end position OPEN: 0 End position OPEN: 1

Channel 5

Datapoint type

Description

Direction

Send condition

Туре

Position (register)

Value inverted

Function

Address

Polling interval

End position CLOSED

Not end position CLOSED: 0 End position CLOSED: 1

Channel 6

Datapoint type

Description

Direction

Send condition

Type

Position (register)

Value inverted

Function

Address

Polling interval

DPT 01 - binary - 1 bit	•
Drive 1 End position OPEN	
○ KNX to modbus ◎ Modbus to KNX	
On change	•
Bit in word register	•
Bit 00	•
◎ No ○ Yes	
Read holding registers - 03	
Read input registers - 04	
1003	* *
Every cycle	-

DPT 01 - binary - 1 bit	•
Drive 1 End position CLOSED	
KNX to modbus O Modbus to KNX	
On change	•
Bit in word register	•
Bit 00	•
🔘 No Yes	
Read holding registers - 03	
Read input registers - 04	
1004	÷
Every cycle	•

Error

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

Channel 7		
Datapoint type	DPT 01 - binary - 1 bit	•
Description	Drive 1 Failure	
Direction	○ KNX to modbus ◎ Modbus to KNX	
Send condition	On change	•
Туре	Bit in word register	•
Position (register)	Bit 00	•
Value inverted	🔘 No 🗌 Yes	
Function	 Read holding registers - 03 Read input registers - 04 	
Address	1005	* *
Polling interval	Every cycle	•

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.

Channel 8		
Datapoint type	DPT 05 - unsigned - 1 byte	Ŧ
Description	Drive 1 Condition code	
Direction	KNX to modbus 🔘 Modbus to KNX	
Send condition	On change	Ŧ
Туре	Word register	
Position (register)	Low byte	Ŧ
Function	 Read holding registers - 03 Read input registers - 04 	
Address	1006	÷
Polling interval	Every cycle	Ŧ

Current

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

Channel 9	C	ha	nn	el	9
-----------	---	----	----	----	---

Datapoint type	DPT 07 - unsigned - 2 bytes 🔹				
Description	Drive 1 Current mA				
Direction	○ KNX to modbus ◎ Modbus to KNX				
Send condition	On change 🔹				
Туре	Word register				
Position (register)	High/Low byte Configured				
Function	 Read holding registers - 03 Read input registers - 04 				
Address	1010 ‡				
Polling interval	Every eighth cycle 🔹				
Voltage measured at the drive Channel 10	DPT 07 - unsigned - 2 bytes				
Deteriotion	Drive 1 Valtage mV				
Direction	KNX to modbus O Modbus to KNX				
Send condition	On change 🔹				
Туре	Word register				
Position (register)	High/Low byte Oconfigured				
Function	 Read holding registers - 03 Read input registers - 04 				
Address	1011 ‡				
Polling interval	Every eighth cycle 🔹				

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.



About						
Presentation		Name *	Vendor	Version	License	+ Install App
1	15	Device Compare	KNX Association	6.1.5686.0	•	
Language	G.	Device Templates	KNX Association	6.1.5686.0	•	/
Licensing	-	EIBlib/IP	KNX Association	6.1.5686.0	•	Check For Updates
ETS Apps		Extended Copy	KNX Association	6.1.5686.0	•	
Online Catalog		Labels	KNX Association	6.1.5686.0	•	ETS App Store
Data Storage	м	ModbusGateway ConfigTool	Weinzierl Engi	1.2.1		Customize and extend your ETS by using Apps available in the KNX App Store.
Connection Manager		Project Tracing	KNX Association	6.1.5686.0	•	Find More Apps
Troubleshooting		Replace Device	KNX Association	6.1.5686.0	•	
Shortcuts		Split and Merge	KNX Association	6.1.5686.0	•	
Label Printer						

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.

KNX III KNX ACB Driv	<i>r</i> e × + ✓	- 🗆 X
\leftarrow \rightarrow T Devices /	🖶 KNX Modbus RTU Gateway 886 + Add 🗸 🗙 Delete 🞍 Download 🗸 🗠 Undo 🗄	Panels \vee \square \vee \bigcirc \square \vee :
🖸 Devices 🗸 🗸	Image: Image	Properties
 Devices Dynamic Folders Image: KNX Modbus RTU G 	Export data from ETS Save to file	Settings Comments Information Name KNX Modbus RTU Gateway 886 Individual Address
		Last Modified 10.11.2023 10.46 Last Downloaded - Serial Number - Status Unknown •
		SP Find and Replace
		Workspaces Todo Items
		Pending Operations
	()	undo History

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

KNX 🗄 KNX ACB Driv	e × + ×	- 🗆 X	
\leftarrow \rightarrow \square Devices /	🗐 KNX Modbus RTU Gateway 886 + Add 🗸 🗙 Delete 🞍 Download 🗸 🗠 Undo 🖽	Panels > 🖾 > 🛈 🕐 🗘 > 🚦	
🖸 Devices 🗸 🗸	It Group Objects 12 It Parameters DCA	Properties >	
Devices Dynamic Folders	Export data from ETS Save to file Load from file Import data to ETS	Settings Comments Information Name KAX Modbus RTU Gateway 886 Individual Address Description Last Modified 10.11.2023 11:06 Last Downloaded - Serial Number - Setatus Unknown	
	<pre> { "data_points": [</pre>		
<pre>19 "direction": "knx_to_modbus", 20 "register_type": { 21 "position": "low_byte", 22 "value_knx_min": 0, 23 "value_kny_may": 100</pre>		B Groups	
	24 "value_register_min": 0, 25 "value_register_max": 100	🗄 Workspaces	
	26 }, 27 "address": 2001	🖻 Todo Items	
	28 }, 29 {	Pending Operations	
	30 "dp_type": "05-unsigned",	🗠 Undo History	

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

KNX ACB Drive × + ~				- 🗆 ×
← → E Devices / I KNX Modbus RTU (Gateway 886 🔔	🛓 Download 🗸 🍐 Highlight Change	es 🕼 Default Parameters 🕼 Undo 🗄	Panels \vee \square \vee \bigcirc \bigcirc \square \vee :
Devices ~	[]∰ Group Objects 45 🔐 Pa	Properties >		
E Devices	KNX Modbus RTU Gatew			
> 🛅 Dynamic Folders				Settings Comments Information
✓ ·□ KNX Modbus RTU Gateway 886	Description	Slave address type	Common 🔘 For this page	Name
📸 251: Diagnostic: Slave (page 1) - No communication	Consultantian	Slave address	1	KNX Modbus RTU Gateway 886
📑 252: Diagnostic: Slave (page 2) - No communication	General settings			Individual Address
📸 253: Diagnostic: Slave (page 3) - No communication	Modbus settings	Slave description		
📑 254: Diagnostic: Slave (page 4) - No communication				Description
💦 276: Diagnostic: Slave (common) - No communication	Datapoints 1 - 10	Channel 1		
🛃 1: Drive 1 Control command: Input - Unsigned - 1 byte	Datapoints 11 - 20	Datapoint type	DPT 05 - unsigned - 1 byte	
🛃 2: Drive 1 Nominal position: Input - Percent - 1 byte		Description	Drive 1 Control command	
🛃 3: Drive 1 Target speed: Input - Unsigned - 1 byte	Datapoints 21 - 30	Direction	KNX to modeus Modeus to KN	Last Modified 10.11.2023 11:53
📑 4: Drive 1 Actual position: Output - Percent - 1 byte	D	Direction		Last Downloaded
📑 5: Drive 1 End position OPEN: Output - Switch - 1 bit	Datapoints 31 - 40	Туре	Word register	Serial Number -
🖹 6: Drive 1 End position CLOSED: Output - Switch - 1 bi	Datapoints 41 - 50	Position (register)	Low byte	Status
😭 7: Drive 1 Failure: Output - Switch - 1 bit		Function	Write single holding register - 06	Unknown 👻
🖹 8: Drive 1 Condition code: Output - Unsigned - 1 byte	Datapoints 51 - 60	Address	2000	
😭 9: Drive 1 Current mA: Output - Unsigned - 2 byte	Datapoints 61 - 70			
📑 10: Drive 1 Voltage mV: Output - Unsigned - 2 byte	Datapoints of - 70	Channel 2		
🛃 11: Drive 2 Control command: Input - Unsigned - 1 by	Datapoints 71 - 80	Datapoint type	DPT 05 - nercent - 1 hyte	DD 0
🛃 12: Drive 2 Nominal position: Input - Percent - 1 byte		Budpoint type	birtos percent royac	Ha Groups
🛃 13: Drive 2 Target speed: Input - Unsigned - 1 byte	Datapoints 81 - 90	Description	Drive 1 Nominal position	5 Find and Replace
😭 14: Drive 2 Actual position: Output - Percent - 1 byte	Datapoints 91 - 100	Direction	KNX to modbus O Modbus to KN	- · · · · - · · · · · · · · · · · · · ·
15: Drive 2 End position OPEN: Output - Switch - 1 bit		Туре	Word register	🗄 Workspaces
16: Drive 2 End position CLOSED: Output - Switch - 1	Datapoints 101 - 110	Position (register)	Low byte	-
😭 17: Drive 2 Failure: Output - Switch - 1 bit	Datapainte 111 120			🖾 Iodo Items
18: Drive 2 Condition code: Output - Unsigned - 1 byt	Datapoints 111 - 120	Value minimum (register)	U	D Pending Operations
19: Drive 2 Current mA: Output - Unsigned - 2 byte	Datapoints 121 - 130	Value maximum (register)	100	
隆 20: Drive 2 Voltage mV: Output - Unsigned - 2 byte		Value minimum (KNX)	0	Undo History
21: Drive 3 Control command: Input - Unsigned - 1 by *	Datapoints 131 - 140	<	>	

KNX MCB Drive	. × + ~				- 🗆 X		
\leftarrow \rightarrow Devices /	KNX Modbus RTU	Gateway 886	$+$ Add $ $ \vee $ imes$ Del	lete 🛓 Download 🗸 🗠 Undo 🖽	Panels \vee \square \vee \bigcirc \land \land :		
📰 Group Addresses 🗸 🗸	Associations 0			♀ Search ∨	Properties		
🔢 Group Addresses	Object *	Device	Sending Data Type C R W T	U Product Program			
> bynamic Folders					Settings Comments Information		
✓ 器 1 Ventilation					Name		
~ 盟 1/1 Zone 1					Drive 1 Nominal position: Input		
🔀 1/1/1 Opened		Description					
8 1/1/2 Closed							
🔀 1/1/3 Actual position							
8 1/1/4 Nominal position	I liek with 1/1/ Nominal parities						
			a cintenti, i, interniner posicien		Priority		
			4		Low		
					Flags		
					✓ Communication		
					Read Vite		
					Transmit		
					Update Dead On Init		
Devices	~	Group Objects 45	ters DCA	Search V	Data Type		
Devices		Number * Name	Object Function Description	Group Addres Length C R W T U	4* character		
> bynamic Folders		All Drive 1 Control command: In. Unsigned - 1 byte 1 byte C		1 byte C - W ^	4.001 character (ASCII)		
> 🛯 KNX Modbus RTU Gateway	y 886	2 Drive 1 Nominal position: In	pPercent - 1 byte	1 byte C - W	4.002 character (ISO 8859-1) 👻		
		Drive 1 larget speed: Input	Unsigned - I byte	I byte C - W	88 Groups		
		5 Drive 1 End position: Out	Q., Switch - 1 bit	1 bit C R - T -			
		6 Drive 1 End position CLOSE	Drive 1 End position CLOSEDSwitch - 1 bit 1 bit C R - T - 🔊		☞ Find and Replace		
		7 Drive 1 Failure: Output	Switch - 1 bit	1 bit C R - T -			
		💦 8 Drive 1 Condition code: Out	p Unsigned - 1 byte	1 byte C R - T -	🗄 Workspaces		
		P Drive 1 Current mA: Output	Unsigned - 2 byte	2 bytes C R - T -	_		
		10 Drive 1 Voltage mV: Output	Unsigned - 2 byte	2 bytes C R - T -	🖺 Todo Items		
		11 Drive 2 Control command: I	n Unsigned - 1 byte	1 byte C - W			
		I2 Unive 2 Nominal position: In In I2 Drive 2 Target speed laput	Incident - 1 byte	i byte C - W	Pending Operations		
		14 Drive 2 Actual position: Out	putPercent - 1 byte	1 byte C R - T - V	⊯ Undo History		
		<	. *	>			

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**.





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