

# Die Königsklasse

## The Royal League

...der Lufttechnik,  
Regeltechnik  
und Antriebstechnik



Die Königsklasse

## Basics ECblue

# Welcome

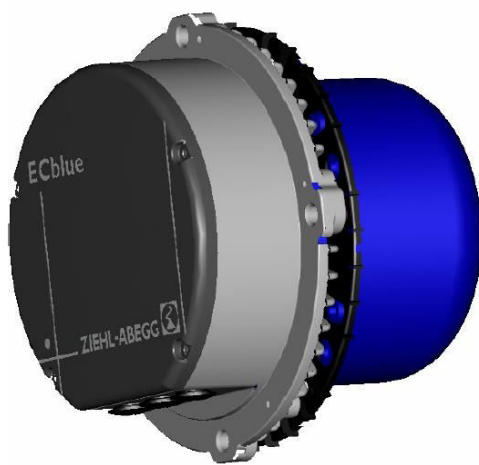
Dirk Rotering  
Technischer Vertriebssupport Elektronik  
V-STE



# Die Königsklasse

## Basics ECblue

external rotor motor or internal rotor motor (IEC)?



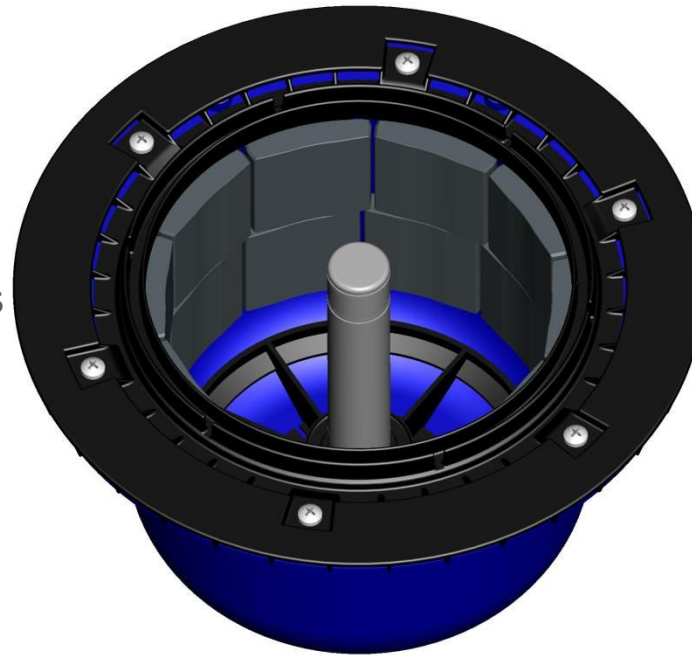
or



## Basics ECblue

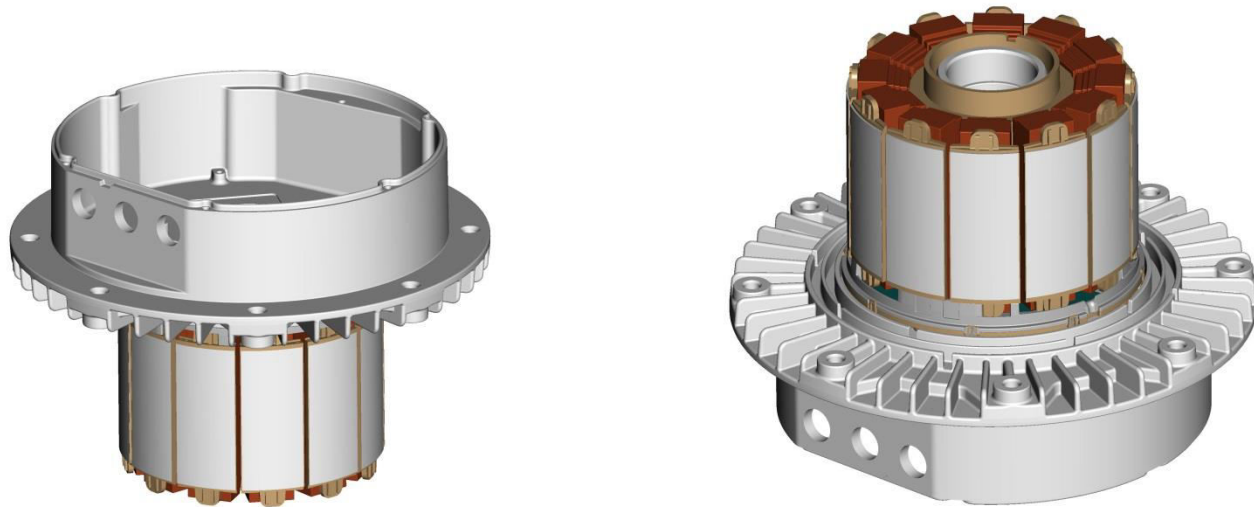
external rotor motor ECblue Ziehl-Abegg construction

rotor with permanent magnets  
system integrated



## Basics ECblue

external rotor motor ECblue Ziehl-Abegg construction

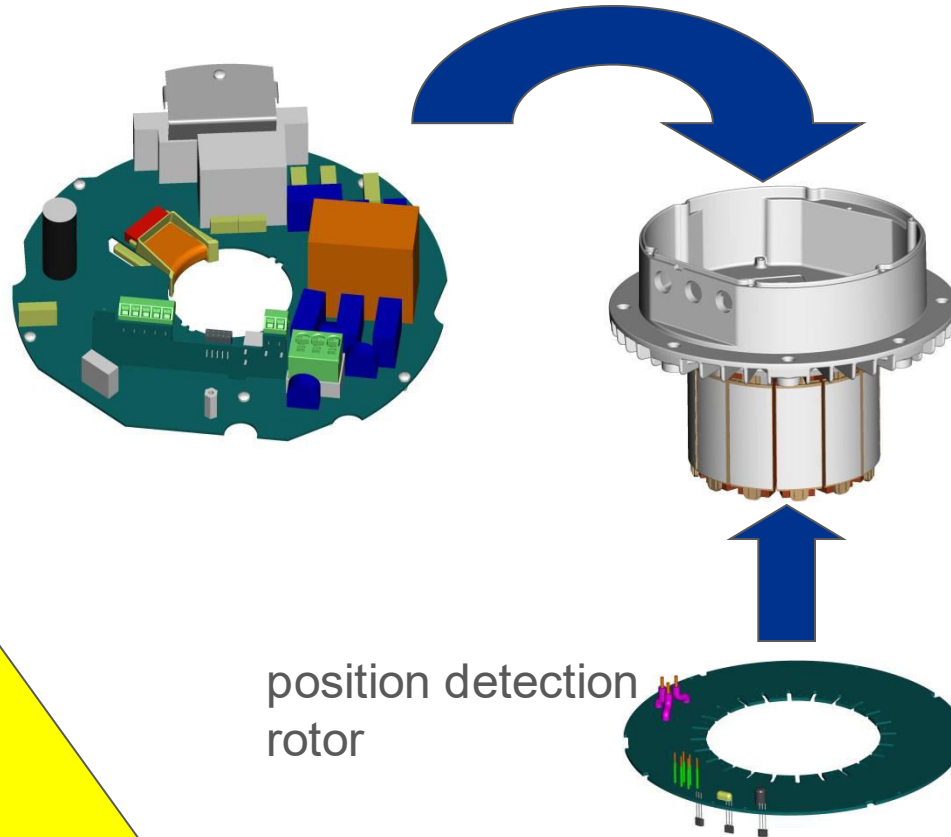


Stator with motor winding

# Die Königsklasse

## Basics ECblue

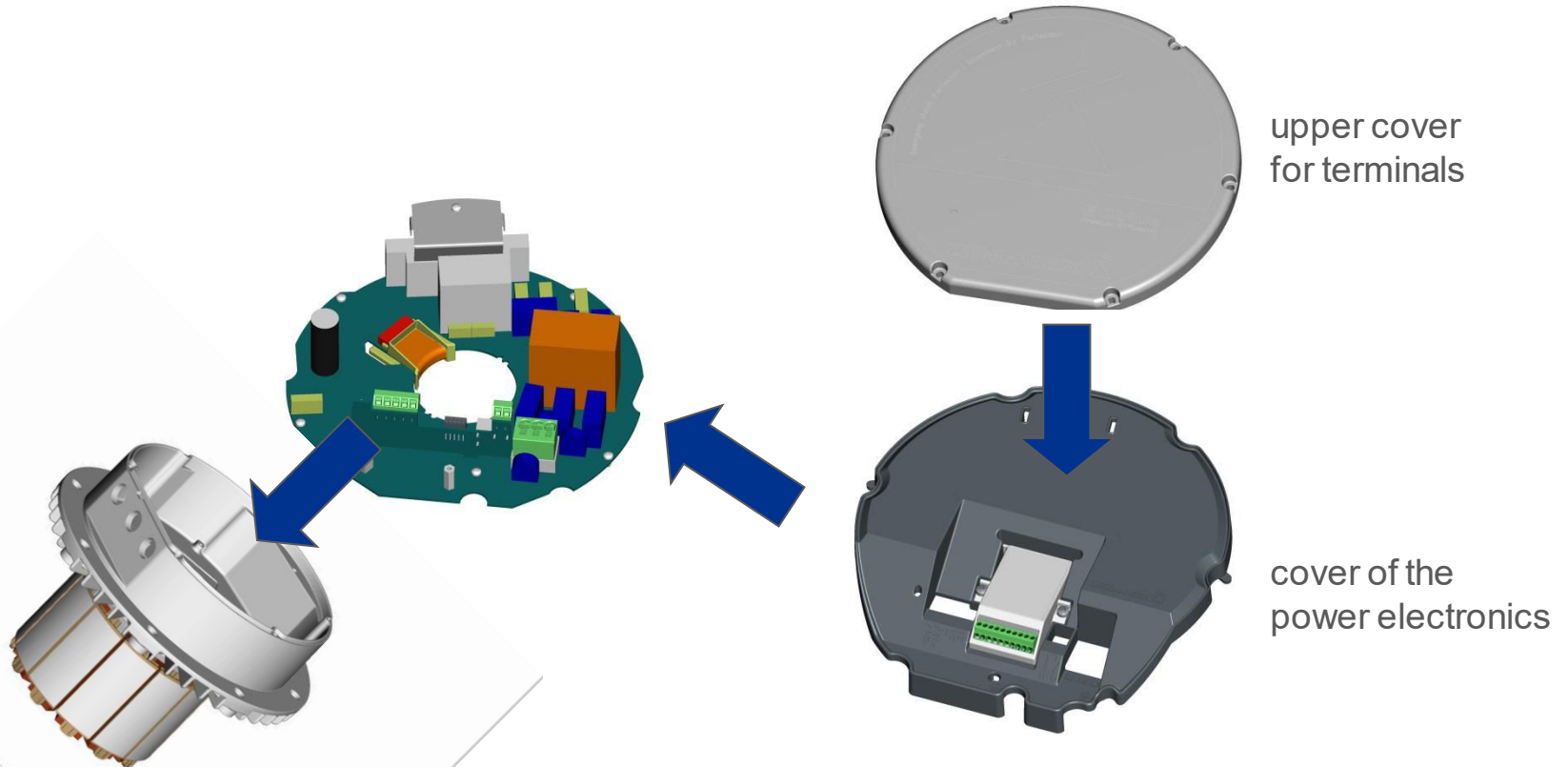
power electronics



do not remove cover  
with live power  
high voltage!!!

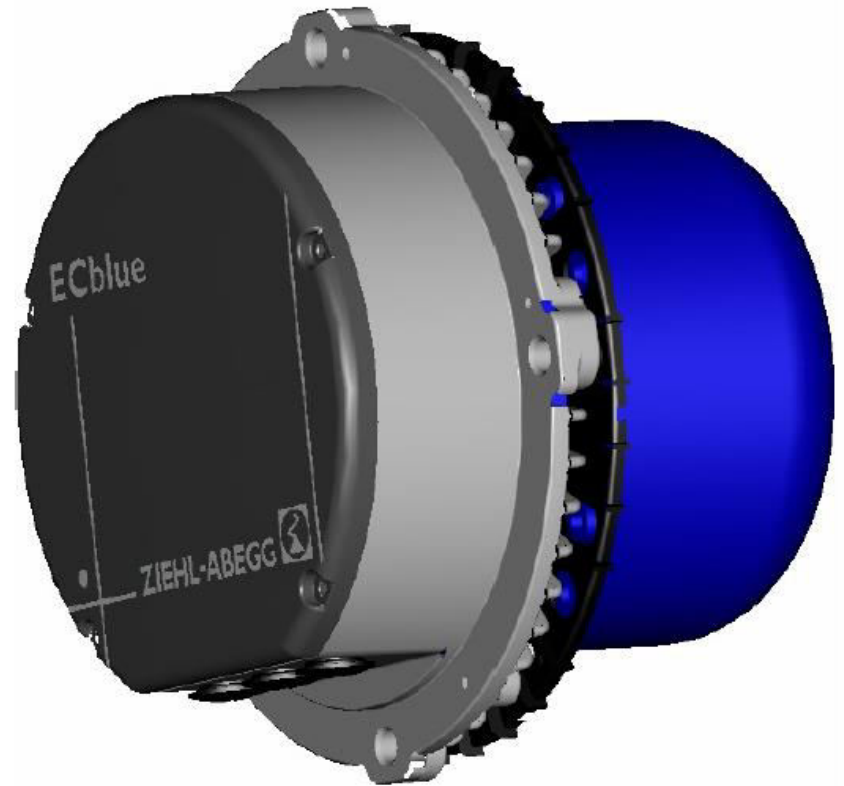
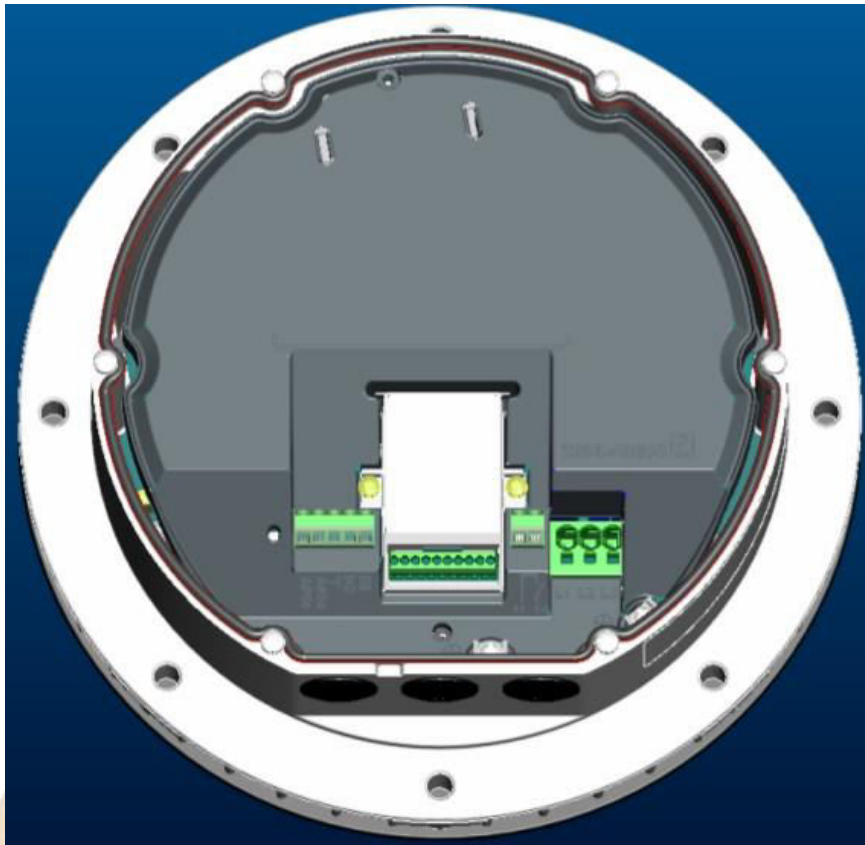
# Die Königsklasse

## Basics ECblue



# Die Königsklasse

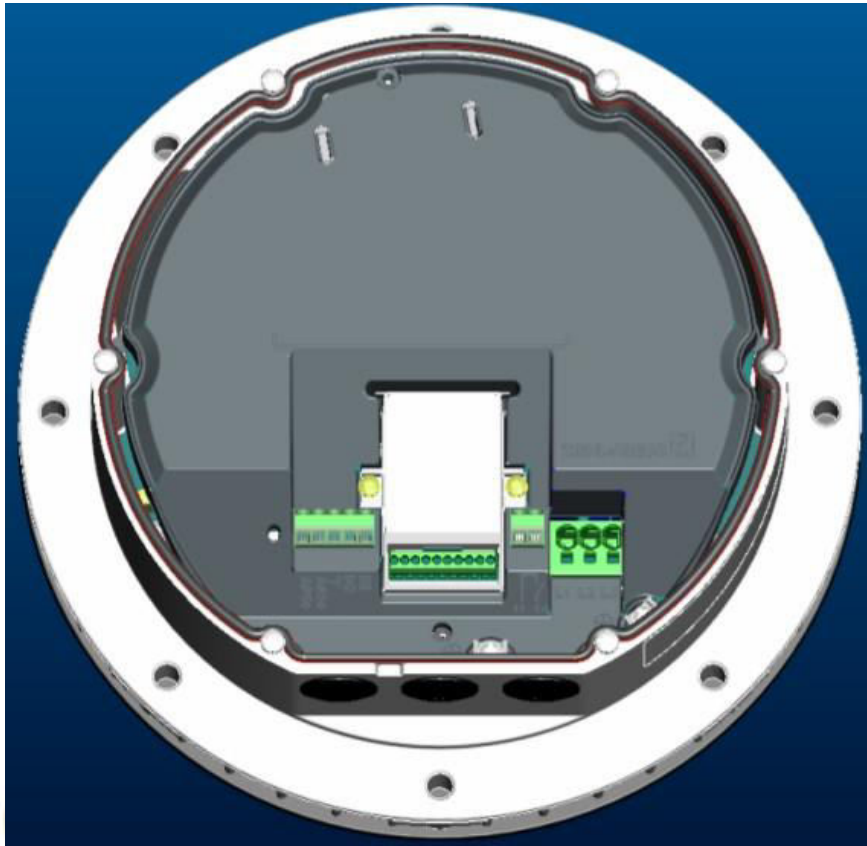
## Basics ECblue





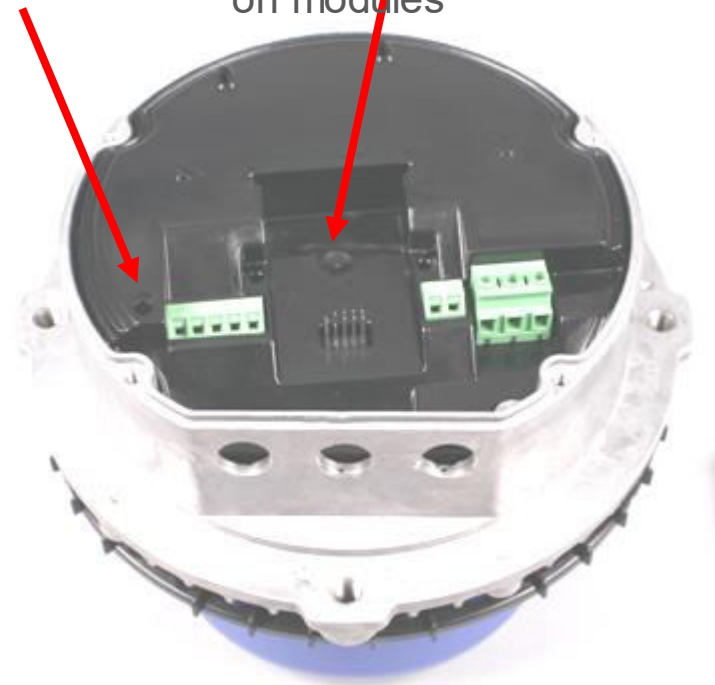
# Die Königsklasse

## ECblue



status LED  
diagnostic

socket for add  
on modules



ECblue Basic

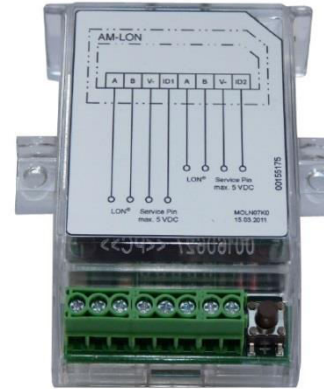
# Die Königsklasse

## ECblue

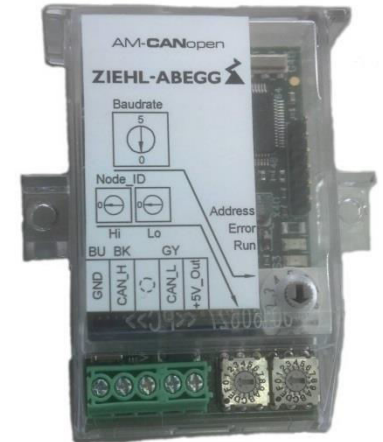
ECblue variants:

- Basic ECblue ( without add on Module)
- ECblue Modbus RTU (AM-MODBUS)
- ECblue Premium (AM-PREMIUM)
- ECblue Modbus Wireless (AM-MODBUS-W)
- ECblue Premium Wireless ( AM-PREMIUM-W )
- different add on Modules for Bus connection.

LON



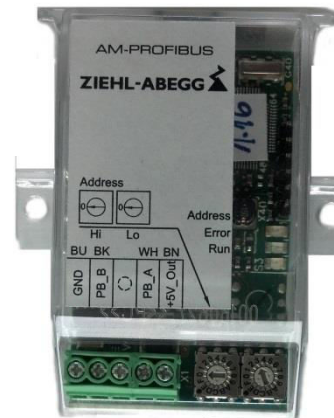
CAN



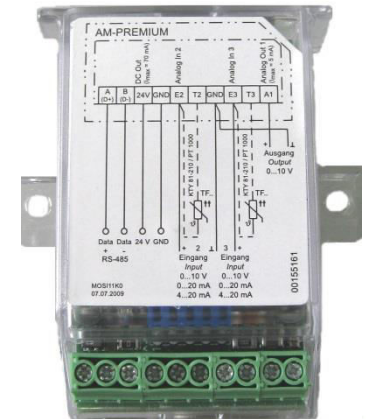
AM Modbus



Profibus



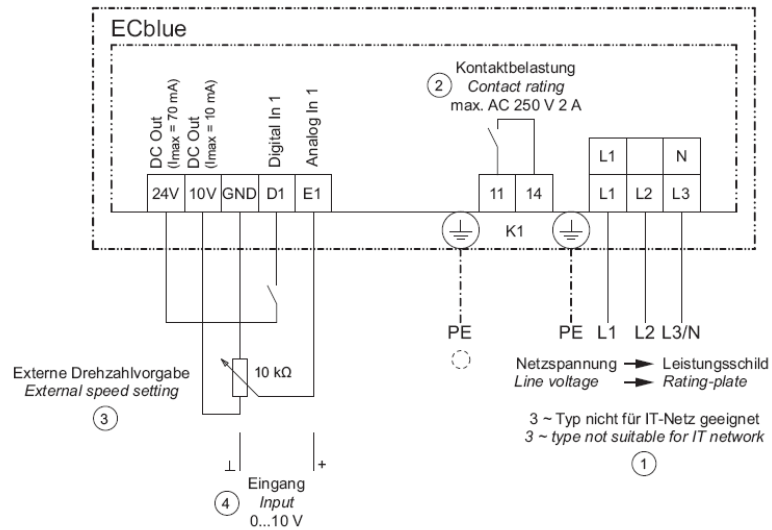
Premium control functions



# Die Königsklasse

## ECblue

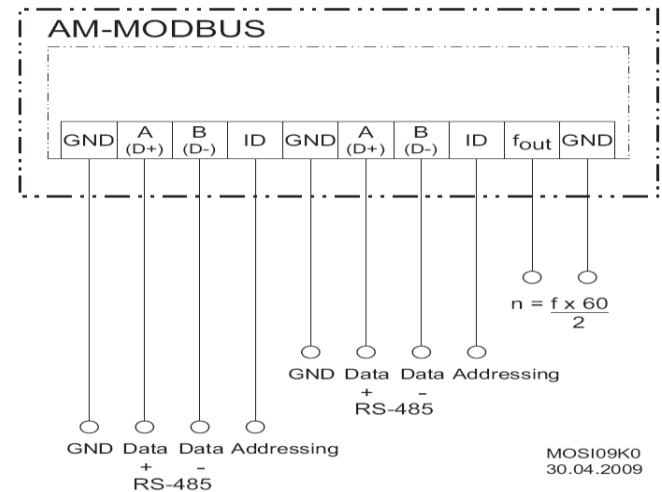
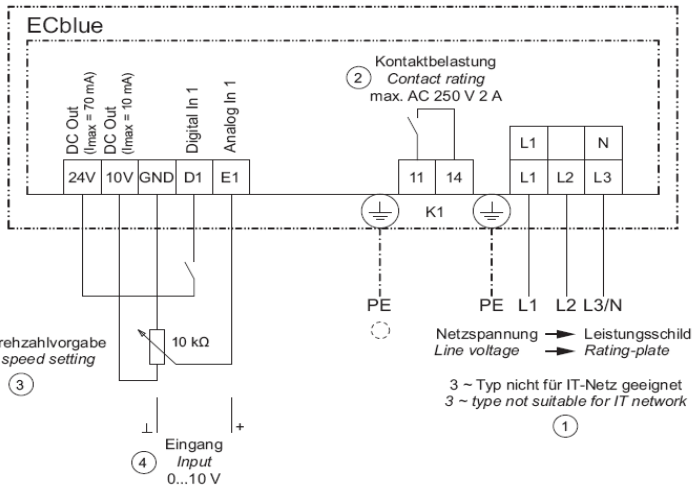
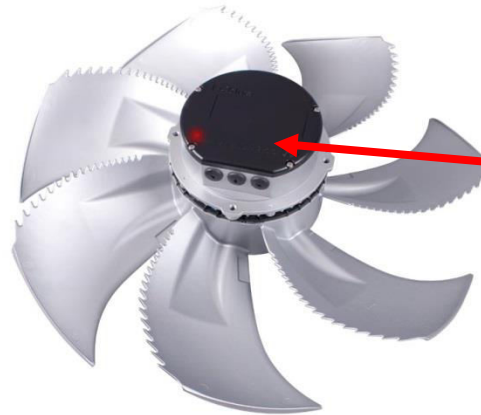
Basic Variante (without add on Module)



# Die Königsklasse

## ECblue

Modbus RTU



## ECblue

### ■ recapitulation benefits of ECblue:

- high energy density → compact motor and controls integrated cooling
- wide voltage range with stable speed → reduced Logistics
- maximum speed independent of the mains frequency
- integrated status LED → no additional display necessary
- high flexibility by different add on Modules → simple expansion of the functionality of the Basic version
- open loop control or closed loop control for different applications (refridgeration, temperature, pressure, airvolume, air velocity) → no additional PLC necessary, only the premium add on module
- automatic adressierung by using the AM-Modbus → no manual adressing necessary by using Modbus RTU (Ziehl-Abegg Patent).
- Intelligent system → easy handling parametering with Handheld A-G-247NW or AM-Config
- high efficiency product for the future, fullfills ERP

# Die Königsklasse

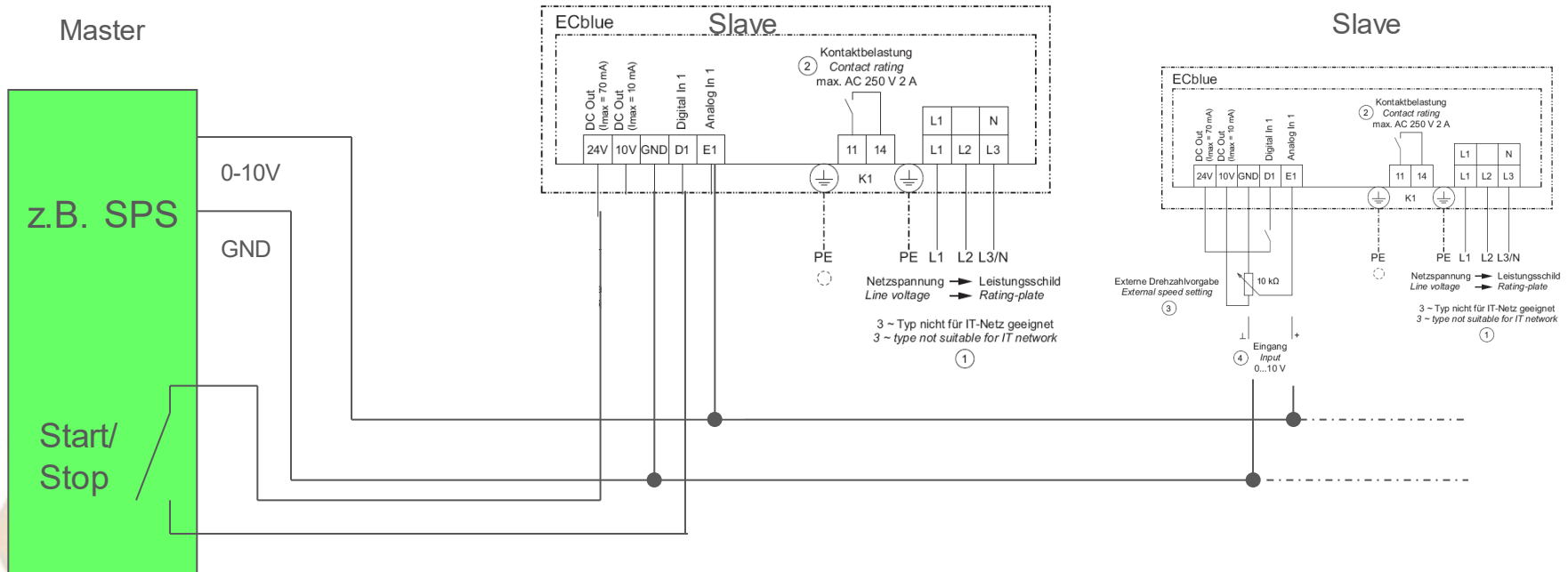
## Factory settings

# Die Königsklasse

## Factory settings

open loop controller 0-10V (= factory setting of the ECblue Ziehl-Abegg)

diagnostic on board (blinkcode) no additional tools needed.

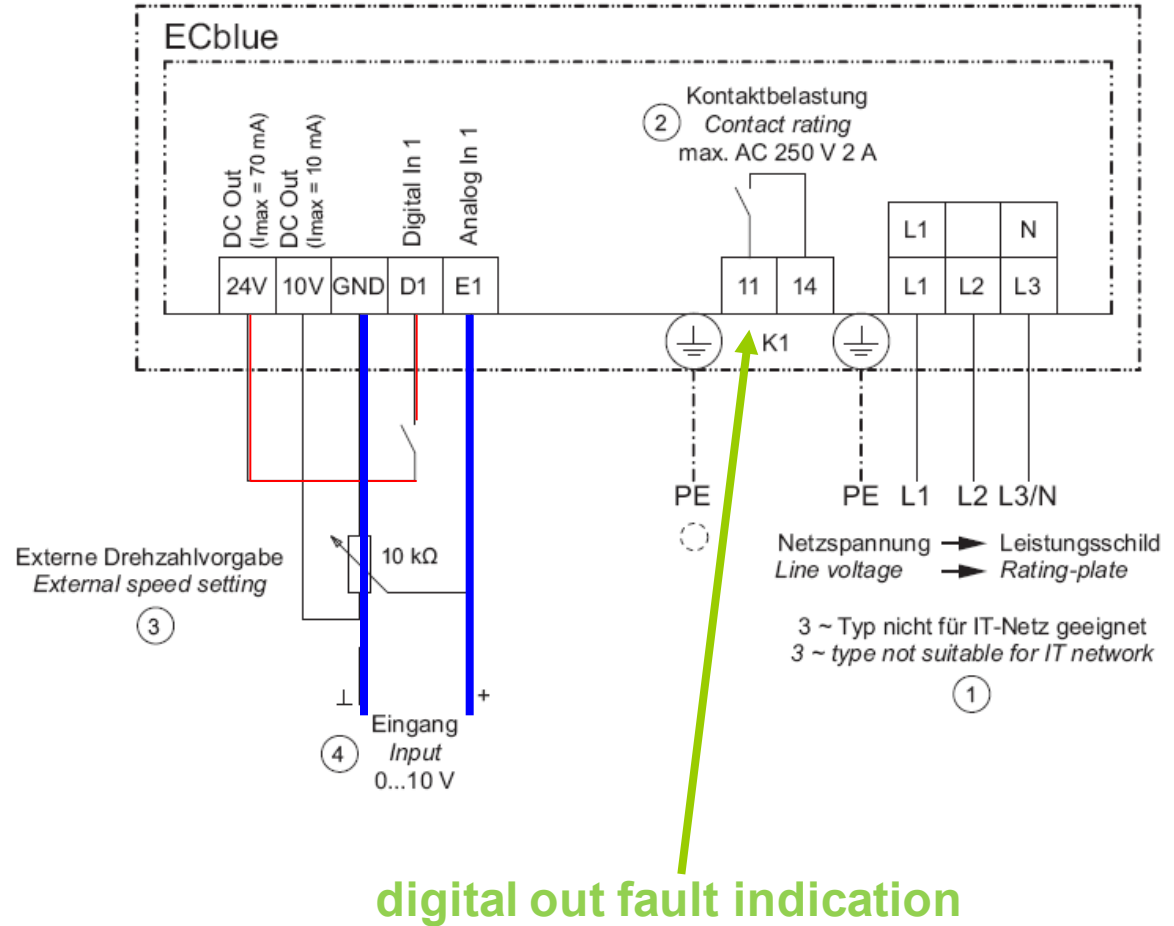


# Die Königsklasse

## Factory settings

release with a link 24V to D1

control with 0-10V signal





# Die Königsklasse

## Features with Modbus optional

open loop control with Modbus RTU.

Master



Modbus D- \_\_\_\_\_  
Modbus D+ \_\_\_\_\_  
GND \_\_\_\_\_

Slave



Slave

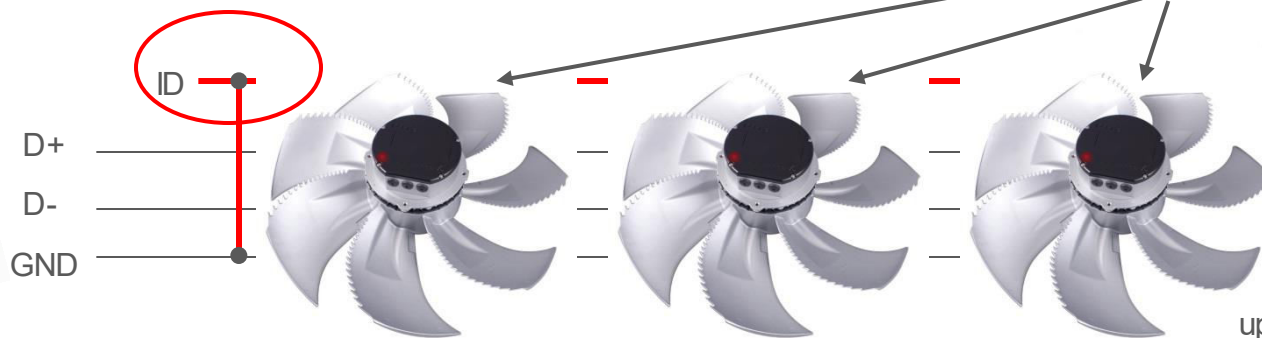


## Features with Modbus optional

### auto addressing Modbus RTU

factory setting of the address is 247 for each fan. For using more than one fan with Modbus RTU they have to have individual addresses. This can be done with the handheld terminal by using the auto address function. The addresses will follow the wiring, starting with 1.

auto addressing only with AM Modbus



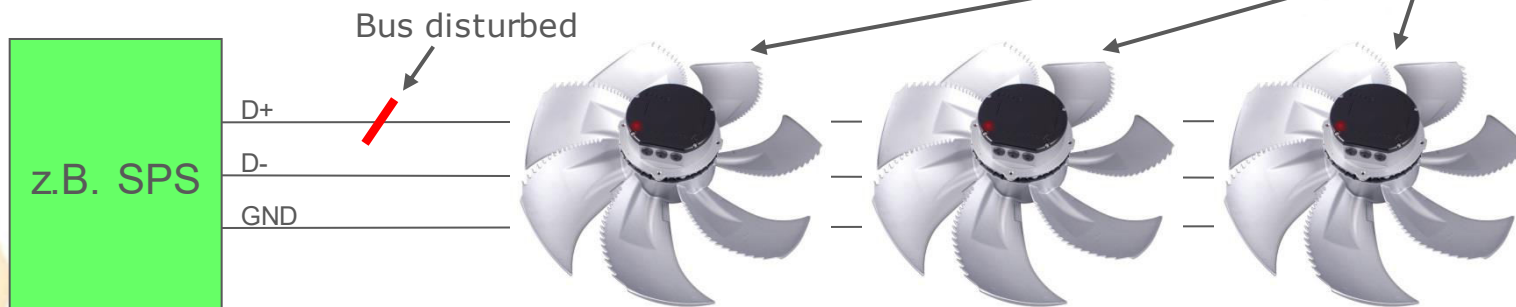
## Features with Modbus optional

### Watchdog

AM Modbus has a integrated watchdog which detects a broken bus; the reaction is programmable

- Watchdog Time
- Watchdog Mode

AM Modbus



Die Königsklasse

# Settings of the ECblue

20

ECblue Motoren

Dirk Rotering | 22.11.2013

Bewegung durch Perfektion | Movement by Perfection

**ZIEHL-ABEGG** 

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## Settings of the ECblue

Ziehl-Abegg A-G-247NW



Ziehl-Abegg AM Config Modul

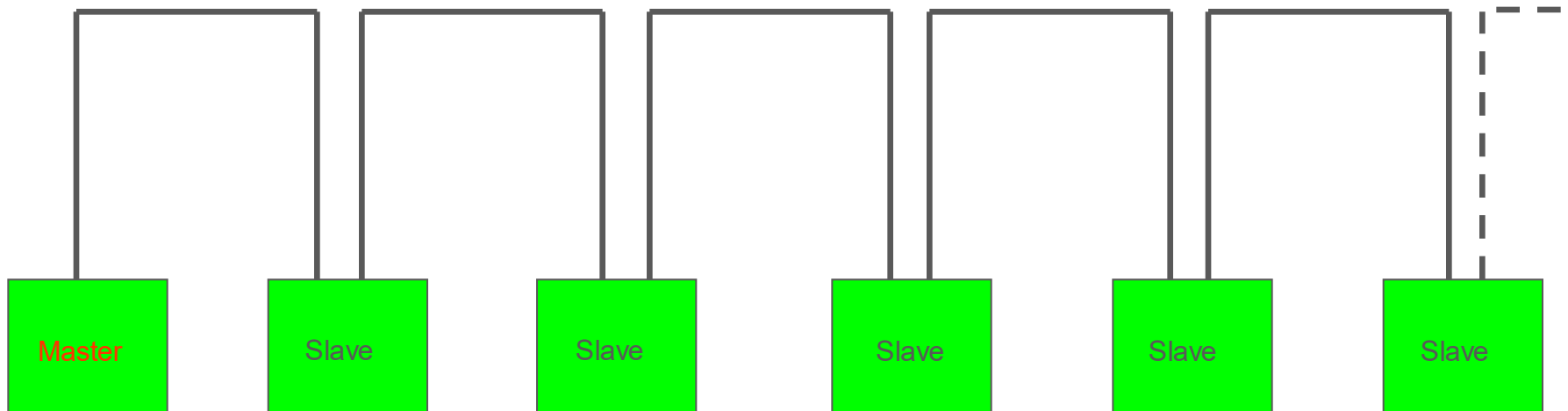


# Die Königsklasse

## specifics controlling with Modbus

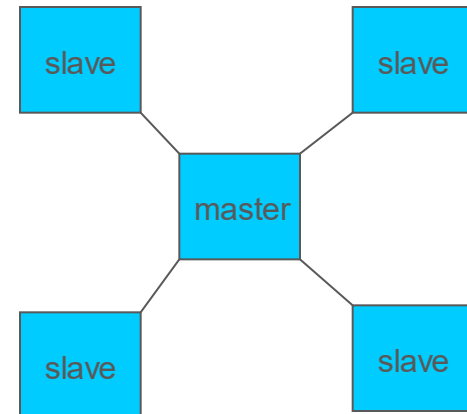
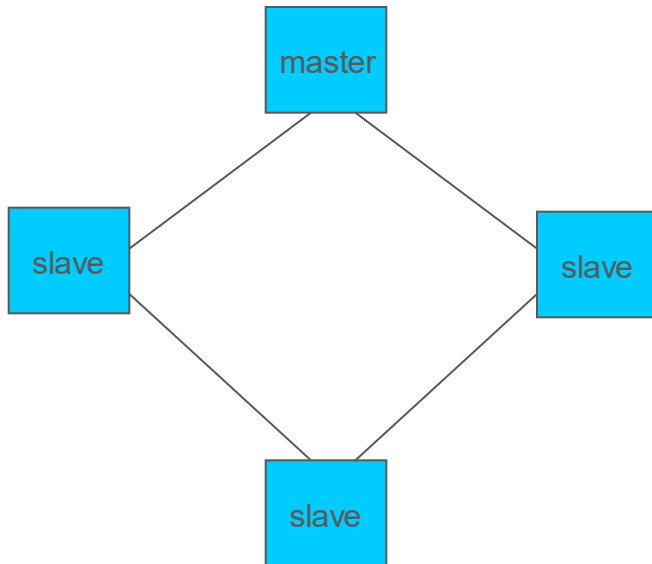
## wiring the Bus

Daisy chain topology



## wiring the Bus

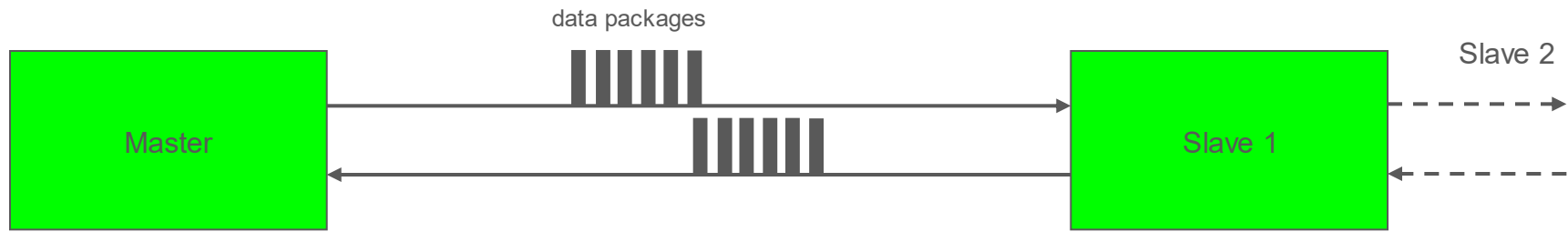
not usable wiring





## Function communication Modbus

Modbus communication between Master Slave



*Communication modes:*

Unicastmode



## Function communication Modbus

Modbus communication between Master Slave

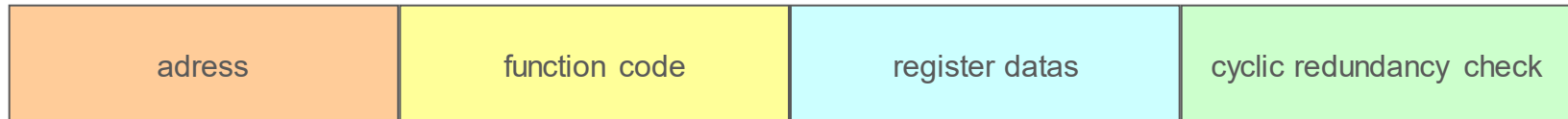


*Communication modes:*

Broadcast

## structure of datapackage Modbus

Modbus data package



Modbus adress 0-247

- 01 Read Output coils
- 05 Write single output coils
- 15 Write multiple output coils
- 02 Read input contacts
- 04 Read analog input registers
- 03 Read analog output holding registers
- 06 Write single analog output holding registers
- 16 Write multiple analog output holding registers

setpoint  
actual value  
Nmin  
Nmax

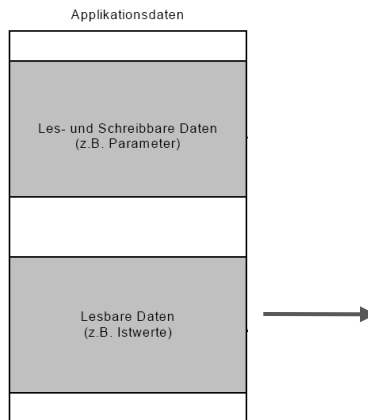
error check bytes

# Die Königsklasse

## Organisation of Modbus registers

### Registers of the Ziehl-Abegg controls:

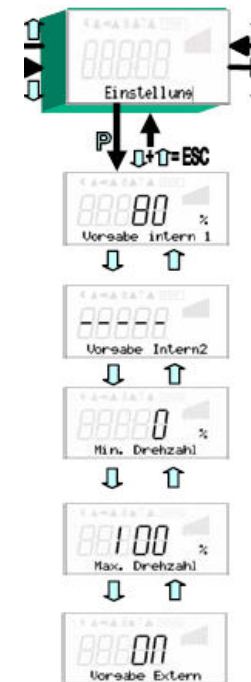
#### Modbus registers



#### Modbus RTU table of Ziehl-Abegg controls

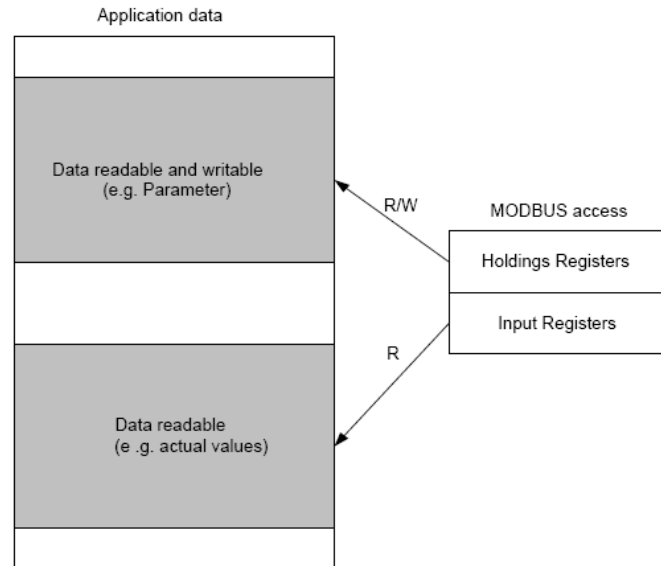
Registeradr.	Name	description
1		Do not use
2		Do not use
3		Do not use
4		Do not use
5	Menu language	0=D, 1=GB, 2=F, 3 = SE, 4= I
6	Reset instruction	1= controller reset!
7	Setpoint 1.1	2740 corresponds 0, range depending on resolution (Modus)
8	Setpoint 1.2	2740 corresponds 0, range depending on resolution (Modus)
9	Control range 1	2740 corresponds 0, range depending on resolution (Modus)
10	Setpoint 2.1	2740 corresponds 0, range depending on resolution (Modus)
11	Setpoint 2.2	2740 corresponds 0, range depending on resolution (Modus)
12	Control range 2	2740 corresponds 0, range depending on resolution (Modus)
13	Setting internal 1	speed
14	Setting internal 2	speed
15	Minimum 1	speed
16	Maximum 1	speed
17	Minimum 2	speed
18	Maximum 2	speed
19	Manual setting	0-100%
20	Manual setting mode	0/1 = ON / OFF
21	Setting external mode	0/1 = ON / OFF
22	Mode	0 = 1.01, following depending on table see manual
23	Controller type	0=P, 1=PID
24	Reverse control function 1	0/1 = ON / OFF
25	Reverse control function 2	0/1 = ON / OFF
26	Minimum speed cut off	0/1 = ON / OFF

#### Menu structure of Ziehl-Abegg controls



## Organisation of Modbus registers

### Registers of Ziehl-Abegg controls:



Analog Inputs:

Holding Register	Value range	Function like
9001	0-10V, 0-20mA = 0 - 32767	E1 (if E1 input = „Bus“)
9002	0-10V, 0-20mA = 0 - 32767	E2 (if E2 input = „Bus“)

Digitale Inputs:

Coil Register	Value range	Function like
1	0/1 (OFF/ON)	D1 (if D1 Busmodus = ON)
2	0/1 (OFF/ON)	D2 (if D2 Busmodus = ON)

# Die Königsklasse

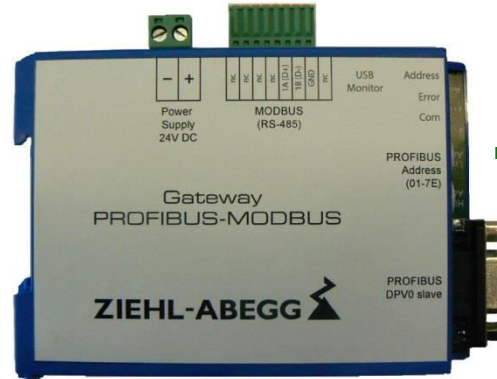
## ECblue and Modbus / Profibus

Master Siemens PLC



Profibus DP  
Ziehl-Abegg Gateway

Profibus



Modbus  
RTU

Slaves



Slaves



...64 Slaves

Die Königsklasse

Thank you for attention

