

## Electrical Features



### Motors acc. to EN 60034-1

Protective system	IP55
Insulation class	F
Number of poles	2
Efficiencies	EN 60034-30, IE2 ≥ 0.12 kW / IE3 ≥ 0.48 kW*

\* Motors without fans, such as those installed in TB16-100 or FT35, are excluded.

	50 Hz		60 Hz	
	220 V – 240 V $\Delta$ 380 V – 415 V $\Upsilon$	380 V – 415 V $\Delta$	460 V $\Upsilon$	460 V $\Delta$
up to 5.5 kW	Standard	●	Standard	●
as of 6.0 kW	–	Standard	–	Standard

In accordance with DIN EN 60034-1, **Zone A**, and permanent operation, the voltage tolerance is  $\pm 5\%$  and the frequency tolerance is  $\pm 2\%$ .

Special voltages are available upon request:

	200 V	200 V 220 V	200 V – 220 V 400 V	380 V	400 V	415 V	440 V	480 V	500 V	575 V	200 V $\Upsilon\Upsilon\Upsilon$ 400 V $\Upsilon$	230 V $\Upsilon\Upsilon\Upsilon$ 460 V $\Upsilon$
50 Hz	●	–	–	●	●	●	–	–	●	–	●	–
60 Hz	–	●	●	●	●	–	●	●	–	●	–	●

Other voltages upon request.

For operation at 60 Hz, as well as the choice of the corresponding motor winding, the manufacturer will also adapt the hydraulics, e. g. with smaller impellers or dummy stages.

For special demands, versions for use with a standardized voltage 50 and 60 Hz (Transformer usage) are possible after consulting with the company, e. g. 3 x 400 V,  $\pm 5\%$ , 50 – 60 Hz.

### Motors as of 6 kW

Motors are  $\Delta$  connected.

The motor design allows  $\Upsilon/\Delta$ -starting, if required.

Screw-spindle pumps used for  $\Upsilon/\Delta$ -starting must be started without pressure.

Soft-starting devices are a recommendable alternative to  $\Upsilon/\Delta$ -starting.

### Switching-on frequency

Motors less than 3 kW ►  
maximum 200 times per hour

Motors from 3 kW to 4 kW ►  
maximum 40 times per hour

Motors from 5 kW to 9 kW ►  
maximum 20 times per hour

Motors as of 11 kW ►  
maximum 15 times per hour

Higher on/off cycling frequencies are available upon request.



### Non-European Regulations, Brinkmann motors



Approved by UL with „UL Recognized Component Mark“ for USA acc. to UL 1004-1 and for Canada acc. to CSA C22.2 No. 100-14 (UL-File E233349)



Brinkmann Motors up to 15 kW, 60 Hz, and up to max. 600 V are available with UL Recognized Component Mark approval as special designs.

Brinkmann motors ranging from 2.3 kW to 13 kW, 50 Hz, are available with the China Energy Label GB18613-2020, Grade 3 upon request.



CC311B

Compliance Certification number CC311B according to 10 C.F.R. §431 (NEMA PREMIUM EFFICIENCY)

Brinkmann motors ranging from 0.86 kW to 15 kW, 60 Hz, are available with NEMA PREMIUM MG 1 upon request.

Brinkmann Motors Options	50 Hz					60 Hz								
	200 V	380 V	400 V	415 V	500 V	200 V 220 V	380 V	400 V	440 V	460 V	230 V 460 V	480 V	230 V 480 V	575 V 600 V
UL/CSA	-	-	-	-	-	●	●	●	●	●	●	●	●	●
CEL (Grade 3) ≥ 2.3 kW	●	●	●	●	●	-	-	-	-	-	-	-	-	-
NEMA PREMIUM MG 1 ≥ 0.86 kW	Y 0.86 – 6.3 kW	-	-	-	-	●	●	●	●	●	●	●	●	●
	Δ 3.45 – 15 kW	-	-	-	-	-	●	●	●	●	-	●	-	●
	YY/Y 0.86 – 15 kW	-	-	-	-	-	-	-	○	-	-	●	-	●

● available    - not available    ○ upon request    Additional country-specific approvals upon request.

### Non-European Regulations, Standard motors

Upon request. Depending on actual motor rating and sizing (Power / Motor efficiency class) deviations in pump and motor configurations are possible. An overview of pumps built with standard motors can be found on our website.

### Current / Rated current

The current ( $I_{\text{catalog}}$ ) stated at the name plates is used for the sizing of electronic components.

Motor ≤ 0.12 kW (50 Hz):  $I_{\text{max}} = I_{\text{catalog}}$   
 Motor 0.17 kW – 0.32 kW:  $I_{\text{max}} = \text{please see table}$   
 Motor ≥ 0.48 kW:  $I_{\text{max}} = 1.05 \times I_{\text{catalog}}$

Power	$I_{\text{max}}$ @400 V, 50 Hz	$I_{\text{max}}$ @460 V, 60 Hz
0.17/0.195 kW	$I_{\text{max}} = 1.2 \times I_{\text{N}}$	$I_{\text{max}} = 1.08 \times I_{\text{N}}$
0.22/0.255 kW	$I_{\text{max}} = 1.14 \times I_{\text{N}}$	$I_{\text{max}} = 1.08 \times I_{\text{N}}$
0.32/0.365 kW	$I_{\text{max}} = 1.24 \times I_{\text{N}}$	$I_{\text{max}} = 1.1 \times I_{\text{N}}$

Special voltages upon request.

For extended voltage ranges we mention only the highest current value in our data sheets.

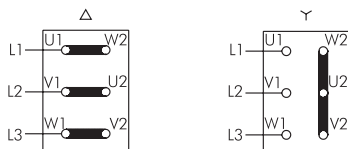
## Electrical Features



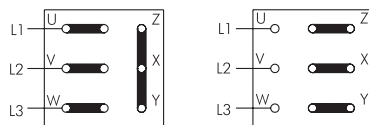
### Circuits

**Standard voltage changing**  $\Upsilon / \Delta$   
e. g. 220 – 240 V / 380 – 415 V, 50 Hz

$\Delta$  (Delta Connection)      $\Upsilon$  (Star Connection)



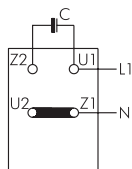
**Voltage changing 1 : 2**  $\Upsilon\Upsilon / \Upsilon$   
e. g. 230 V / 460 V, 60 Hz



$\Upsilon\Upsilon$   
Low Voltage

$\Upsilon$   
High Voltage

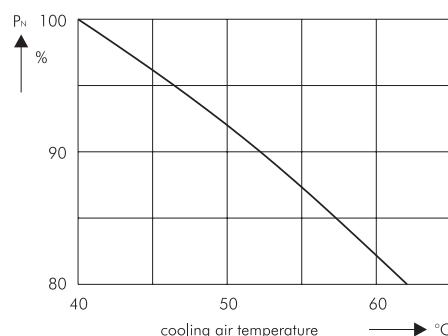
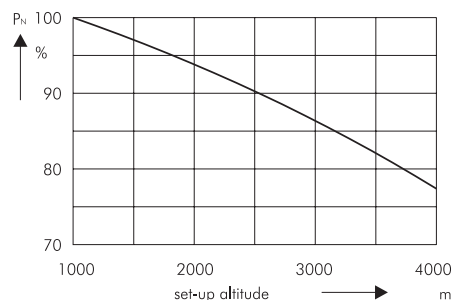
**Optional Connection to single-phase**  
e. g. 1 x 230 V, 50 Hz:



### Set-up altitude and coolant temperature

The specified power ratings ( $P_N$ ) and operating values for the motors apply for operating mode S 1 according to EN 60034-1 (continuous operation) at a frequency of 50 Hz, rated voltage, a cooling air temperature (KT) of max. 40 °C and a set-up altitude of up to 1000 m above sea level. The motors can also be used at a cooling air temperature above 40 °C up to max. 60 °C or set-up altitude above 1000 m above sea level. In such cases the power rating must be reduced according to the diagrams, or an appropriately larger motor version or higher heat class has to be selected. However, a deviation from the specified data is necessary when the cooling air temperature is reduced according to table simultaneously at set-up altitudes higher than 1000 m above sea level.

Set-up altitude / m	Maximum cooling air temperature for heat class F / °C
0 up to 1000	40
1000 up to 2000	30
2000 up to 3000	19
3000 up to 4000	9

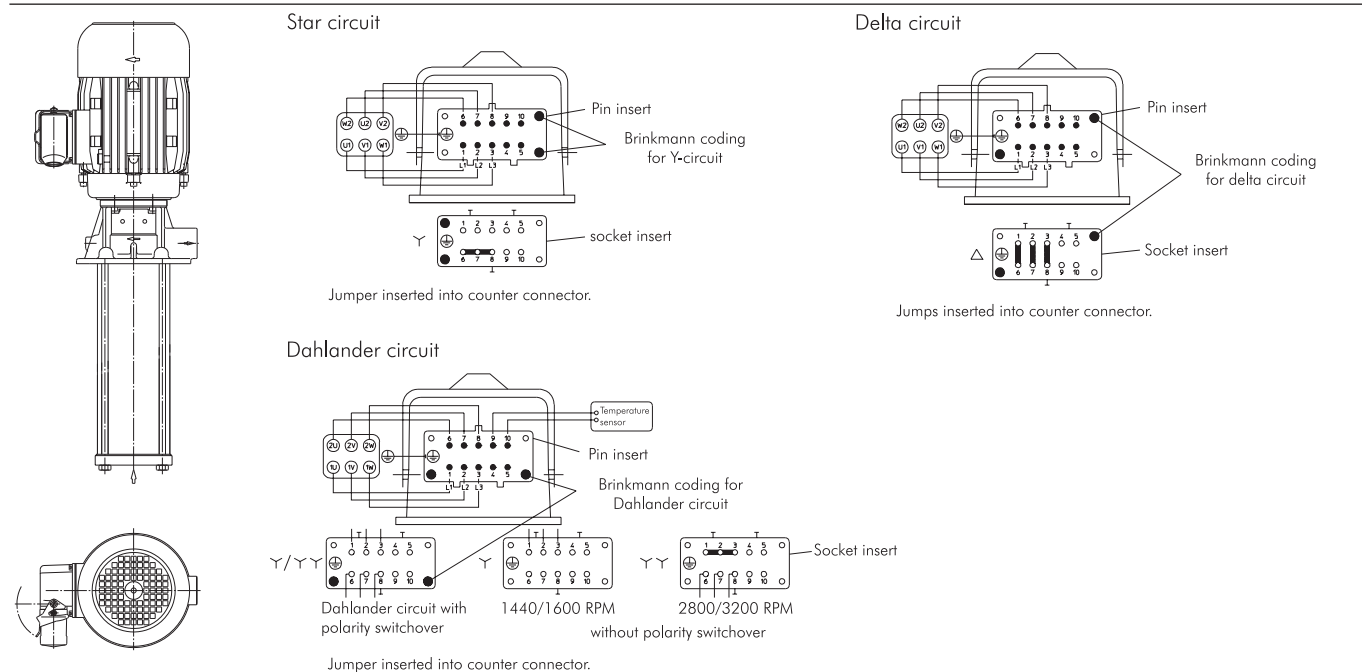


### Noise Levels

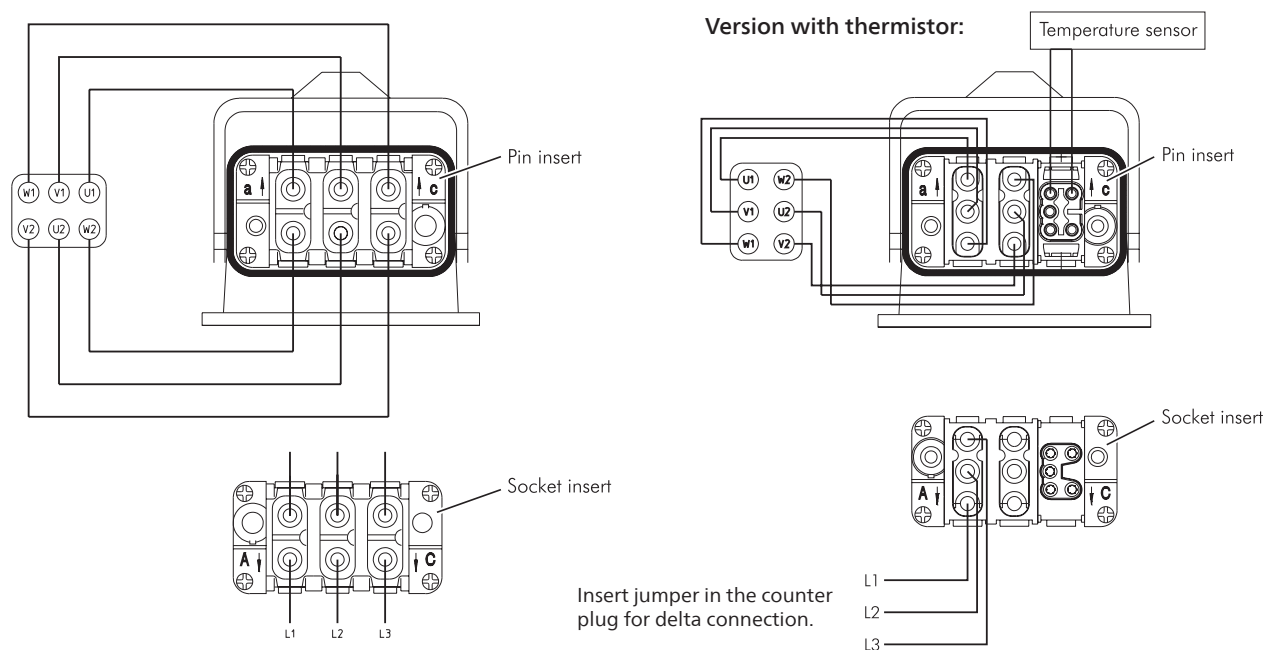
The noise levels stated in the catalog are valid for 50 Hz operation. For 60 Hz operation the noise levels are approximately 3 – 4 dBA above those stated. For reduced noise levels special axial motor fan blades are available upon request.



### Pin assignment for HAN 10-pin connector for pumps with motors up to 5.5 kW



### Assignment for HAN modular plug connector for pumps with motors from 6 kW to 13 kW



### Positions for motor connection plug – View onto terminal board

