



VECTRON

FREQUENCY INVERTER

VCB 400
from 4 to 355 kW

FOR VARIABLE SPEED AC DRIVES



EU region



EU Directive (CE marking)

North America/Canada



UL, cUL



Bonfiglioli Group

Power & Control Solutions



VECTRON

SUPER MOTOR DRIVE

With the VCB range, VECTRON introduces a powerful generation of frequency inverters.

Their all-in-one features are bound to provide the right solution for your drive requirements - from simple speed variation applications up to high dynamic servo applications.

You will find the right specialist partner in VECTRON who gained a wealth of experience accumulated from several 100,000 installed frequency inverters.

Drives with VECTRON frequency inverters offer solutions of rational use of energy and materials in smallest possible physical size - it is a way to bionic drives.

● **Smooth acceleration**

with torque control

● **Excellent revolving**

at high and very low speeds

● **Pretentious positioning**

even with full load torque at zero speed

● **Highly accurate synchronous operation**

for multi-motor drives and electronic gears

● **Highdynamic current and torque limiting**

for proper operation under fast load shocks

● **Sweep function**

with periodical speed reference profiles



TAKE

VECTRON

GET BIONIC

DRIVES



VCB 400



CONVENIENT IN OPERATION AND FLEXIBLE IN APPLICATION

● Wide voltage range

Frequency inverters of the VCB range operate at input voltages from 230 to 500 Vrms.

● Different control methods made to measure

Means free choice of the most suitable control method for specific applications - up to positioning and synchronous drives - using the key pad or any other control unit.

● Butt mounting size

For space and cost saving installation. All drives may be connected to a common DC bus in order to interchange energy.

● PC software VPlus

Is a commissioning and parameterising software, which is available as an accessory and can be used with the 32 bit windows operating systems on your notebook or personal computer. It allows the convenient setting of the frequency inverter to its drive task.

● Plug-in terminals

Are available for all control inputs and outputs for quick connection and disconnection.

● Safety relay as per EN 60204

To prevent unintentional starting during work on the system, e.g. during inspection and servicing.

● Standardized interfaces

Throughout the whole power range.

● Digital communication

Can be done using

- RS 485
- CANopen
- Profibus-DP
- LON



● **Keypad KP 100**

Is a light, handy unit with 4 key operation and with a 140 segment display for alphanumeric characters and symbols. The KP 100 is used for setting up the frequency inverter to the required drive tasks and for displaying the drive parameters.

● **Mounting and installation**

Separate cooling for control electronic and power electronic can be realized.

● **Integrated DC link choke**

To reduce low frequency feedback to the mains with a recommended rated motor output up to 7.5 kW. It saves space and installation costs.

● **Integrated brake chopper**

For limitation of the DC link voltage during regenerative operation.

● **Inputs and outputs**

The VCB range of frequency inverters offers the following control connections for all power classes. They all have a safe isolation and are accessible in the sense of EN. All outputs are also individually isolated.

1	+10V reference supply
2	analog 0 V (GND)
3	analog input 1
4	analog input 1 (GND, reference)
5	analog input 2
6	analog input 2, 3 (GND, reference)
7	analog input 3
8	analog output
1	NO contact
2	centre point relay
3	NC contact

1	+24 V supply output
2	digital 0 V (GND)
3	digital input 1
4	digital input 2
5	digital input 3
6	digital input 4
7	digital input 5
8	digital input 6
9	digital input 7
10	digital input 8
11	external supply 30 V
12	digital output 1
13	digital output 2
14	external supply 0 V (GND)
15	external supply +8 V

● **Extensions and accessories**

VECTRON offers a wide choice of additional facilities for controlling, communication and special control connections as well as accessories to suit your specific requirements.

BASIC FUNCTIONS

Depending on the requirements you have to incorporate various features in your drives. The VCB range of frequency inverters offers you a selection of basic functions which can be activated time and/or event related.

● **Application functions**

give you push-button control for a variety of pre-configured function sequences for lifting drives, winding drives, pressure control etc.

● **Adaptation for analogue inputs and outputs**

for range adjustment to peripheral control elements.

● **Customer's own functions**

can be implemented on request. Consequently, elimination of peripheral components is possible.

● **Unlimited interlinking of function blocks**

the properties of the VCB range can be flexibly adapted to any given drive task thanks to their freely programmable functions.



● Four different data sets

if the operating modes change.

● Torque boost

enables your drive also for high starting torque.

● Synchronisation to a rotating motor

enables starting at any operation point.

● Controlled braking

if you need very fast shut-down without mains unit or brake unit, you can use the voltage control and the motor chopper.

● Motor potentiometer function

if you wish to set the speed through a contact input.

● Technology controller

if you like to carry out for example pressure, volume flow or speed regulation with the integrated PI controller.

● Programmable starting and stopping behaviour

so that the drive can be safely started and stopped and can also be controlled at a standstill according to the application.

● S ramp profile

if your drive has to make a smooth transition from one speed to another.

● Power failure regulation

can be activated using kinetic energies to maintain operation during short blackouts of the mains.

● Parameter identification

if you wish to start your drive with menu guidance.

● Intelligent current limits

allowing the drive to automatically and safely adjust to dynamic load changes and different ambient conditions using its power reserves.

● Brake control

if you want to activate your stop brake at an exact time and without wear.

● Actual value memory

keeps you constantly informed and allows you to monitor various actual values for the application.

● Storing last 16 trips

gives information on irregularities in operation; the last four trips show the accurate operating point of the drive.

● Warning messages

which are signalled by the frequency inverter via digital output as soon as a configurable limit has been reached.

● Free choice of the reference value source

via the frequency reference value channel or percentage reference value channel for each data set. Here several sources can be connected additively.

● Motor circuit breaker

for individual and multiple motor operation to protect the motor and its leads from overheating so that protection is possible in case of a short circuit or overloading.

● Status display of the digital inputs and outputs

so that the present state of the digital inputs and outputs can be controlled during the commissioning phase.

TECHNICAL DATA

VCB 400 / 4-65 kW				VCB 400-010	VCB 400-014	VCB 400-018	VCB 400-025	VCB 400-034	VCB 400-045	VCB 400-060	VCB 400-075	VCB 400-090	VCB 400-115	VCB 400-135
Output motor side	Rated motor output rec.	P	kW	bis 4	5,5	7,5	11	15	22	30	37	45	55	65
	Nominal power	S	kVA	6,9	9,7	12,5	17,3	23,5	31,2	41,6	52,0	62,4	79,7	93,5
	Nominal current	I	A	10	14	18	25	34	45	60	75	90	115	135
	Voltage	U	V	3 x 0 ... mains voltage input										
	Overload capacity	-	-	1,2 / 1,5 for 60 s, according to model										
	Frequency	f	Hz	0 ... 400, according to switching frequency										
Input mains side	Voltage	U	V	3 x 400 (-20%) ... 460 (+10%)										
	Frequency	f	Hz	50 (-10%) ... 60 (+10%)										
	Power factor	cosφ	-	~1 (Power factor of the fundamental)										
General	Short circuit/earth fault	-	-	yes, unlimited										
	Efficiency (approx.)	η	%	98 , at 2 kHz switching frequency										
	Switching frequency	f	kHz	1 ... 8										1 ... 4
	Protection	-	-	IP20, VBG4										
	Dimensions	WxHxD	mm	124 x 406 x 262			124 x 426 x 264	124 x 426 x 274	250 x 376 x 317			300 x 602 x 298		
	Weight (approx.)	m	kg	6			6,5		17	18	19	31,5	32,5	
Environment	Coolant temperature	T _n	°C	0 ... 40 , forced ventilation										
	Rel. Humidity	-	%	15 ... 85 , no condensation										
	Power reduction	ΔP	%	2,5%/K above T _n , T _{max} =50°C; 5%/1000 m above 1000 m above sea level; h _{max} =4000 m										
Options & Accessories	Line choke (uk=4%)	-	-	internal DC – link choke, external				external						
	EMC filter	-	-	external										
	Brake unit	-	-	internal brake transistor, external				external	internal brake transistor, external					
	Dig. Control unit	-	-	yes										

We reserve the right to introduce changes without notice.

Expansions

KP100	Control unit
VPlus	PC software for 32 bit windows operating systems
ADA-VCB-2	RS232 / KP100 interface converter set
VCM-PTC	Motor PTC monitoring
ENC-1	Speed feedback and motor PTC monitoring
EAL-1	Expansion for analog outputs, leading frequency and motor PTC monitoring
SSR	Safety relays (only in combination with VCM-PTC, ENC-1 or EAL-1)
VCI-232	RS232 - connection
VCI-485	RS485 - connection
VCI-CAN	CANopen - connection
VCI-PROF	Profibus-DP - connection
VCI-LON	LON - connection

TECHNICAL DATA

VCB 400 / 75-355 KW				VCB 400-150	VCB 400-180	VCB 400-210	VCB 400-250	VCB 400-300	VCB 400-370	VCB 400-460	VCB 400-570	VCB 400-610
Output motor side	Rated motor output rec.	P	kW	75	90	110	132	160	200	250	315	355
	Nominal power	S	kVA	103,9	124,7	145,5	173,2	207,8	256,3	318,7	395	422,6
	Nominal current	I	A	150	180	210	250	300	370	460	570	610
	Voltage	U	V	3 x 0 ... mains voltage input								
	Overload capacity	-	-	1,2 / 1,5 for 60 s, according to model								
	Frequency	f	Hz	0 ... 400, according to switching frequency								
Input mains side	Voltage	U	V	3 x 400 (-20%) ... 460 (+10%)								
	Frequency	f	Hz	50 (-10%) ... 60 (+10%)								
	Power factor	cosφ	-	~1 (Power factor of the fundamental)								
General	Short circuit/Earth fault	-	-	yes, unlimited								
	Efficiencia (approx.)	η	%	98 , at 2 kHz switching frequency								
	Switching frequency	f	kHz	1 ... 8	1 ... 4							
	Protection	-	-	IP 20, VBG4								
	Dimensions	WxHxD	mm	412x510x362				518x820x406			518x1095x406	
	Weight (approx.)	m	kg	50				110			120	
Environment	Coolant temperature	T _n	°C	0 ... 40 , forced ventilation								
	Rel. Humidity	-	%	15 ... 85 , no condensation								
	Power reduction	ΔP	%	2,5%/K above T _n , T _{max} =50°C; 5%/1000 m above 1000 m above sea level; h _{max} =4000 m								
Options & Accessories	Line choke (uk=4%)	-	-	external								
	EMC filter	-	-	external								
	Brake unit	-	-	internal brake transistor, external								external
	Dig. Control unit	-	-	yes								

We reserve the right to introduce changes without notice.

● EU guidelines

All units from the VCB range are designed and built in accordance with the requirements of the 73/23/EEC guidelines (CE conformity). The EMC 89/336/EEC requirements are also fulfilled subject to correct installation.

The required manufacturer's and conformity declarations are included in the documentation supplied with the equipment.

The frequency inverters VCB 400-010 up to VCB 400-135 are released as per UL in compliance with UL 508c and are in compliance with the CSA standards C22.2 - No. 14-95.

The release of the frequency inverters VCB 400-150 to VCB 400-610 complying with UL and CSA Rules are under development.