INDUSTRY PROCESS
AND AUTOMATION SOLUTIONS

VCB 400

Inverter

Convenient in operation and flexible in application

With the VCB range, BONFIGLIOLI 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 BONFIGLIOLI VECTRON who gained a wealth of experience accumulated from several 100,000 installed frequency inverters.

Drives with BONFIGLIOLI 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

Inverter

VCB 400

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 232
- RS 485
- CAN open
- 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

VCB 400

Inverter

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	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.

Give you push-button control for a variety of pre-configurated function sequences for lifting drives, winding drives, pressure control etc.	**Application functions**
For range adjustment to peripheral control elements	**Adaptation for analogue inputs and outputs**
Can be implemented on request. Consequently, elimination of peripheral components is possible	**Customer's own functions**
The properties of the VCB range can be flexibly adapted to any given drive task thanks to their freely programmable functions	**Unlimited interlinking of function blocks**
If the operating modes change	**Four different data sets**
Enables your drive also for high starting torque	**Torque boost**
Enables starting at any operation point	**Synchronisation to a rotating motor**
If you need very fast shut-down without mains unit or brake unit, you can use the voltage control and the motor chopper	**Controlled braking**
If you wish to set the speed through a contact input	**Motor potentiometer function**
If you like to carry out for example pressure, volume flow or speed regulation with the integrated PI controller	**Technology controller**

VCB 400

Inverter

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 / 22-65 kW overload 1.5				VCB 400 045 OL 1.5	VCB 400 060 OL 1.5	VCB 400 075 OL 1.5	VCB 400 090 OL 1.5	VCB 400 115 OL 1.5	VCB 400 135 OL 1.5
Output motor side	Rated motor output rec.	P	kW	22	30	37	45	55	65
	Nominal power	S	kVA	31,2	41,6	52,0	62,4	79,7	93,5
	Nominal current	I	A	45	60	75	90	115	135
	Voltage	U	V	3 x 0 ... mains voltage input					
	Overload capacity	-	-	1,5 for 60 s					
	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	250 x 376 x 317			300 x 602 x 298		
	Weight (approx.)	m	kg	17	18	19	31,5	32,5	
Environment	Coolant temperature	Tn	°C	0 ... 40 , forced ventilation					
	Rel. Humidity	-	%	15 ... 85 , no condensation					
	Power reduction	ΔP	%	2,5%/K above Tn, Tmax=50°C; 5%/1000 m above 1000 m above sea level; hmax=4000 m					
Options & Acces-sories	Line choke (uk=4%)	-	-	external					
	EMC filter	-	-	external					
	Brake unit	-	-	internal brake transistor, external					

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
VCI-232	RS232 - connection
VCI-485	RS485 - connection
VCI-CAN	CANopen - connection
VCI-PROF	Profibus-DP - connection
VCI-LON	LON - connection

	VCB 400 / 75-250 kW overload 1.5			VCB 400 150 OL 1.5	VCB 400 180 OL 1.5	VCB 400 210 OL 1.5	VCB 400 250 OL 1.5	VCB 400 300 OL 1.5	VCB 400 370 OL 1.5	VCB 400 460 OL 1.5
Output motor side	Rated motor output rec.	P	kW	75	90	110	132	160	200	250
	Nominal power	S	kVA	103,9	124,7	145,5	173,2	207,8	256,3	318,7
	Nominal current	I	A	150	180	210	250	300	370	460
	Voltage	U	V	3 x 0 ... mains voltage input						
	Overload capacity	-		1,5 for 60 s						
	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	412 x 510 x 362			518 x 820 x 406			
	Weight (approx.)	m	kg	50			110			
Environment	Coolant temperature	Tn	°C	0 ... 40 , forced ventilation						
	Rel. Humidity	-	%	15 ... 85 , no condensation						
	Power reduction	ΔP	%	2,5%/K above Tn, Tmax=50°C; 5%/1000 m above 1000 m above sea level; hmax=4000 m						
Options & Acces-sories	Line choke (uk=4%)	-	-	external						
	EMC filter	-	-	external						
	Brake unit	-	-	internal brake transistor, external						

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 VBC 400-010 up to VCB 400-135 are released as per UL in compliane with UL 508c and are in compliance with the CSA stndards 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.

Technical data

VCB 400 / 22-65 kW overload 1.2				VCB 400 045 OL 1.2	VCB 400 060 OL 1.2	VCB 400 075 OL 1.2	VCB 400 090 OL 1.2	VCB 400 115 OL 1.2	VCB 400 135 OL 1.2
Output motor side	Rated motor output rec.	P	kW	22	30	37	45	55	65
	Nominal power	S	kVA	31,2	41,6	52,0	62,4	79,7	93,5
	Nominal current	I	A	45	60	75	90	115	135
	Voltage	U	V	3 x 0 ... mains voltage input					
	Overload capacity	-		1,5 for 60 s					
	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	250 x 376 x 317			300 x 602 x 298		
	Weight (approx.)	m	kg	17	18	19	31,5	32,5	
Environment	Coolant temperature	Tn	°C	0 ... 40 , forced ventilation					
	Rel. Humidity	-	%	15 ... 85 , no condensation					
	Power reduction	ΔP	%	2,5%/K above Tn, Tmax=50°C; 5%/1000 m above 1000 m above sea level; hmax=4000 m					
Options & Acces-sories	Line choke (uk=4%)	-	-	external					
	EMC filter	-	-	external					
	Brake unit	-	-	internal brake transistor, external					

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
VCI-232	RS232 - connection
VCI-485	RS485 - connection
VCI-CAN	CANopen - connection
VCI-PROF	Profibus-DP - connection
VCI-LON	LON - connection

	VCB 400 / 75-355 kW overload 1.2			VCB 400 150 OL 1.2	VCB 400 180 OL 1.2	VCB 400 210 OL 1.2	VCB 400 250 OL 1.2	VCB 400 300 OL 1.2	VCB 400 370 OL 1.2	VCB 400 460 OL 1.2	VCB 400 570 OL 1.2	VCB 400 610 OL 1.2
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	-		1,5 for 60 s								
	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	412 x 510 x 362				518 x 820 x 406			518 x 1095 x 406	
	Weight (approx.)	m	kg	50				110			120	
Environment	Coolant temperature	Tn	°C	0 ... 40 , forced ventilation								
	Rel. Humidity	-	%	15 ... 85 , no condensation								
	Power reduction	ΔP	%	2,5%/K above Tn, Tmax=50°C; 5%/1000 m above 1000 m above sea level; hmax=4000 m								
Options & Acces-sories	Line choke (uk=4%)	-	-	external								
	EMC filter	-	-	external								
	Brake unit	-	-	internal brake transistor, external							external	

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 VBC 400-010 up to VCB 400-135 are released as per UL in compliane with UL 508c and are in compliance with the CSA stndards 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.

VCB designation

Field 1	Field 2	Field 3	Field 4	Field 5	Field 6	Field 7		
Inverter series	Size	Overload OL	Braking unit	KP keypad	Communication modules	Expansion modules	Specialist applications	
VCB 400	045 060 075 090 115 135 150 180 210 250 300 370 460 570 610	**OL1.5** OL1.2	**_no BU** BU	**KP100** _no KP	**VCI 232** _no communic. VCI485 VCICAN VCIPROF VCILON	**_no exp** EAL1 ENC1 VCMPTC		

Standard values are shown in bold

Designation rules

- The BU option is only available with overload OL1.5
- Sizes 570 and 610 are only available with overload OL1.2
- Communication modules (Field 6) are alternatives
- Expansion modules (Field 7) are alternatives

Field 1:	VCB400	= inverter VCB 3ph 400VAC
Field 2:	045	= 22 kW
	060	= 30 kW
	075	= 37 kW
	090	= 45 kW
	115	= 55 kW
	135	= 65 kW
	150	= 75 kW
	180	= 90 kW
	210	= 110 kW
	250	= 132 kW
	300	= 160 kW
	370	= 200 kW
	460	= 250 kW
	570	= 315 kW
	610	= 355 kW

Field 3:	OL1.2	= overload 120%
	OL1.5	= overload 150%
Field 4:	_ (blank)	= no braking unit
	BU	= internal braking unit
Field 5:	_ (blank)	= no keypad
	KP100	= keypad
Field 6:	_ (blank)	= no communication module
	VCI232	= RS232 serial interface
	VCI485	= RS485 serial interface
	VCICAN	= CAN BUS interface
	VCIPROF	= PROFIBUS interface
	VCILON	= LON interface
Field 7:	_ (blank)	= no expansion module
	EAL1	= analog expansion module
	ENC1	= encoder module
	VCMPTC	= temperature control module with PTC thermistor

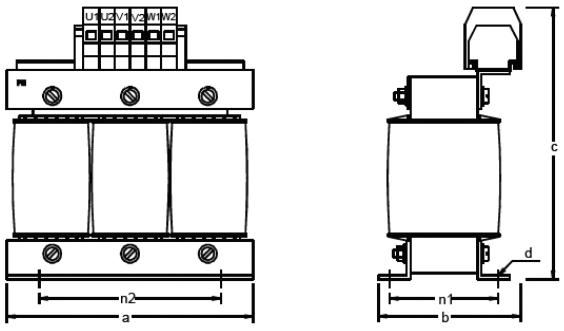
Example of designation: VCB400 060 OL1.5 BU KP100 VCI232

3x400V line inductor for VCB 400 inverters

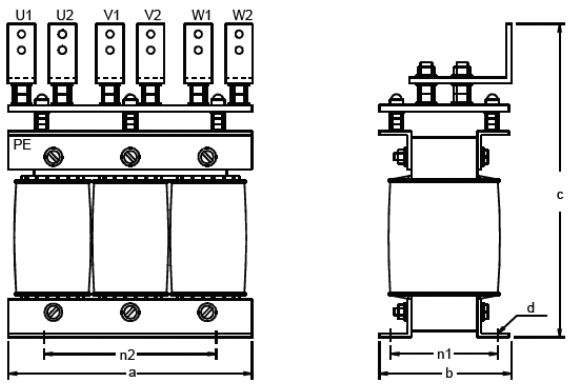
Size	Description of inductor	Rated current (A)	Inductance (mH)	Dissipated power (W)	Dimensions (mm) a	b	c	Installation (mm) n2	n1	d	Weight (kg)
045	LCVT050	50	0.59	100	155	115	190	130	72	8	4,5
060	LCVT060	60	0.49	100	190	110	220	170	58	8	9,0
075	LCVT075	75	0.37	110	190	120	250	170	68	8	12
090	LCVT090	90	0.33	120	190	130	250	170	78	8	12
115	LCVT115	115	0.25	140	210	140	270	180	82	8	14
135	LCVT135	135	0.22	180	240	160	300	190	100	11	20
150	LCVT160	160	0.18	180	240	160	310	190	100	11	20
180	LCVT180	180	0.16	185	240	175	320	190	106	11	22
210	LCVT210	210	0.14	200	240	200	335	190	121	11	26
250	LCVT250	250	0.12	210	240	210	350	190	126	11	28
300	LCVT300	300	0.098	290	320	210	410	240	121	11	38
370	LCVT370	370	0.077	350	320	230	410	240	134	11	46
460	LCVT460	460	0.064	410	360	270	460	240	146	11	55
570	LCVT600	610	0.049	480	360	290	510	310	126	11	65
610		verify the application with Bonfiglioli's technical service									

Always fit the inductor on the input

LCVT050 ... LCVT370



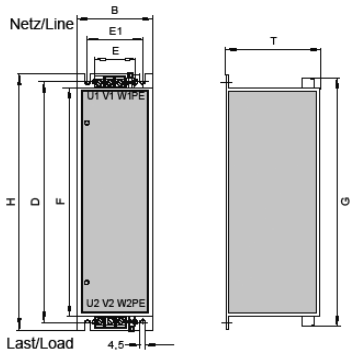
LCVT460 ... LCVT600



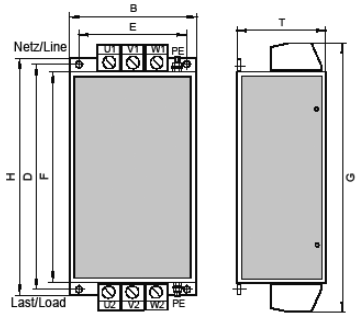
EMC filters for VCB 400 inverters

Size	Description of filter	Rated current (A)	Overload (A)	Dissipated power (W)	Dimensions (mm) H	B	T	Installation (mm) D	E
045	FTV050	50	75	31	290	90	100	275	50/76
060	FTV063	63	94,5	53	330	150	103	315	105
075	FTV080	80	120	68	325	150	107	310	105
90	FTV100	100	150	68	325	150	107	310	105
115	FTV125	125	187,5	82	345	175	137	330	120
135/150	FTV150	150	225	88	405	175	156	390	120
180	FTV180	180	270	150	490	170	158	470	110
210	FTV210	220	330	180	490	170	158	470	110
250	FTV250	250	375	180	490	230	158	470	170
300	FTV300	300	400	200	490	230	158	470	170
370	FTV400	400	600	230	580	230	158	560	170
460	FTV500	500	750	270	630	345	158	530	325
570	FTV600	600	900	290	660	375	187	450	355
610	FTV700	verify the application with Bonfiglioli's technical service							

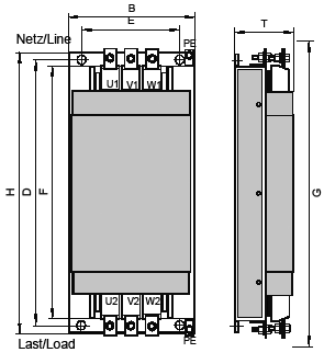
FTV050



FTV063 ... FTV150



FTV180 ... FTV400



FTV500 ... FTV600