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Bharat Bijlee

BBVERT *BL5* Series

Compact Vector Control AC Variable Frequency Drives

Superior Performance Matches Excellent Reliability

BL52/BL50 AC VARIABLE FREQUENCY DRIVES

For over seven decades, Bharat Bijlee has been manufacturing and supplying energy efficient motors upto 1250kW. Since 2008, we also offer AC Variable Frequency Drives in partnership with KEB Automation, Germany.

In most industries that use motors for machinery there is a need for automation to achieve higher productivity, improve overall equipment efficiency and save energy. This is achieved by interfacing motors with AC Variable Frequency Drives that can vary the speed and torque of the motor to meet the application demand, besides reducing starting current kick and providing protection to the motor.

Many customers prefer combination package of motor and Variable Frequency Drive. It also ensures a single window for installation support, on-site service, repair, product training and provision of spares.

In order to meet growing demand of customers, we have introduced BBVERT BL52 and BL50 compact vector controlled AC VFDs that offer excellent reliability and superior performance. BL52 Drives are available from 0.4kW (1HP) to 110kW (150HP) in 3 phase/400V class range. For very low power applications BL50 series is available from 0.2kW (0.25HP) to 3.7kW (5HP) in 230V class (single phase/three phase) and from 0.4 kW (0.5HP) to 3.7kW (5HP) in 400 V class (three phase).

BL52 drives can be used for a variety of applications - fans, blowers, pumps, mixers, plastic machinery, conveyors, textile machinery, packaging machinery and more. Both BL52 and BL50 Drives are available through our sales partners and supported by our service centers across India.

KEY FEATURES OF BL52/BL50 AC VFD

Excellent Overload Capability

The improved current overload capabilities makes this Drive deliver better performance during acceleration/deceleration, and in harsh applications.

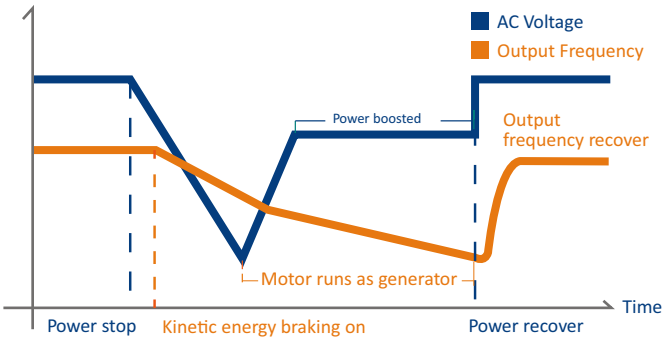
Normal Duty: 120% overload for 1 minute.

Heavy Duty: 150% overload for 1 minute.

180% overload for 10 secs, 200% overload for 1 sec (Short Time Instantaneous Overload)

Kinetic Energy Back-up

When the power shuts down, the regeneration of energy from motor braking is utilized to keep the AC Drive powered until power supply returns.



Conformal Coated Electronic Boards

The PCBs of all the Drives are provided with conformal coating for protection against dust.

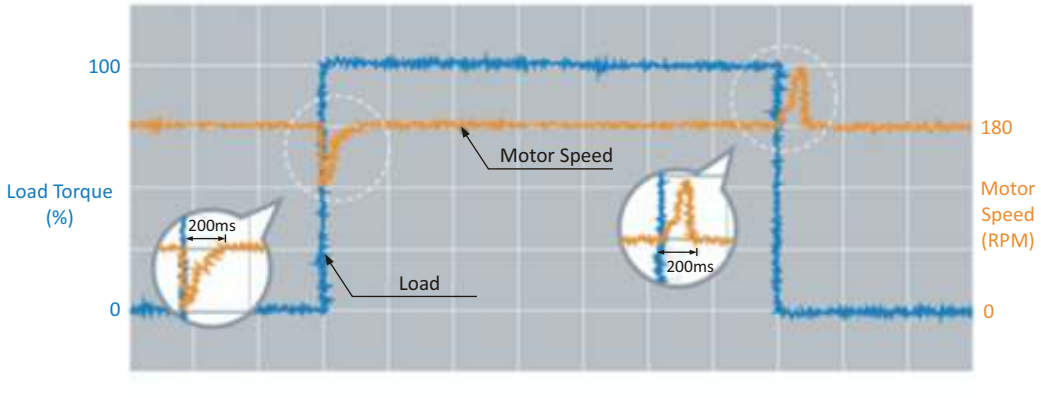
User Friendly Keypad

The Drive is designed with user friendly and easily detachable keypad for parameter setting and for drive operation. The Drive has been provided with Digital Potentiometer on the front keypad for parameter setting. The attractive LED display on the keypad displays parameters like Speed, Current, Energy (kWh) and Voltage. For transfer of parameters from one Drive to another Drive directly, a separate parameter copy unit is also available as an option.

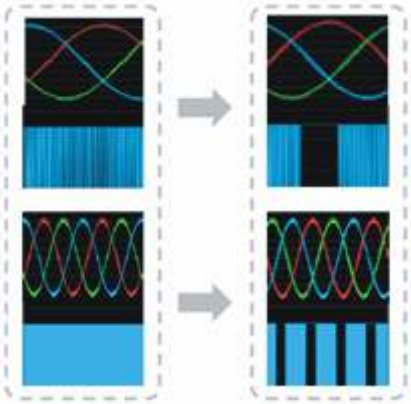
KEY FEATURES OF BL52/BL50 AC VFD

Sensorless Voltage Vector Control Mode

The Drive has built-in sensorless voltage vector control mode that provides quick dynamic response to load variations that results in excellent speed/torque control to meet demanding applications.

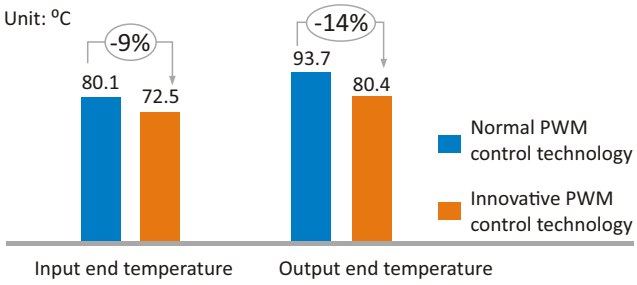


Innovative IGBT control technology guarantees higher reliability



Traditional PWM technology

Innovative PWM technology



Compared with the traditional PWM, it can reduce the number of switches on-off, reduce the operating temperature and prolong the life of IGBT.
At the same time, it can also ensure that the output waveform is not distorted and does not affect the control ability of VFD.

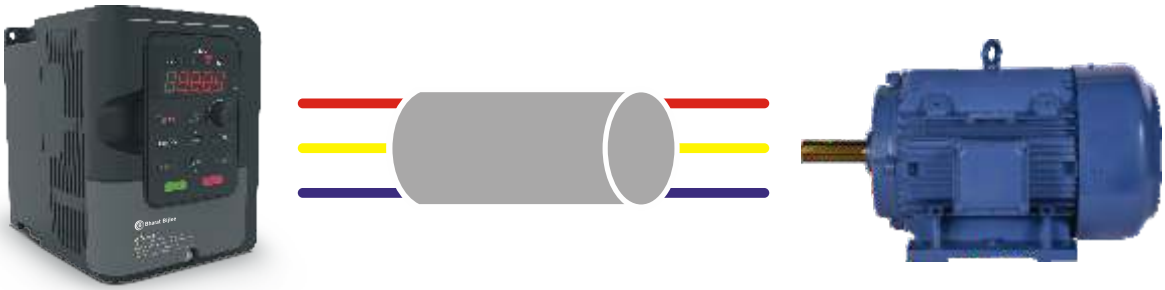
Output Frequency upto 2000Hz!

The Drive can deliver standard output frequency upto 400Hz. However the output frequency of the Drive can be extended upto 2000Hz (with appropriate declaration according to clause 3D225/3A225 Annexure 1 of E.U Regulation) to meet high speed machine tool applications like spindles (suitable Dv/Dt filter or output choke will be required for spindle application).

KEY FEATURES OF BL52/BL50 AC VFD

Suitable for long distance

- The Drive is suitable for cable distance upto 100 mtr from the motor.
- For Drive applications, beyond 100 mtr, the output choke/Dv/Dt filter is required for protection of motor winding.
- The detachable keypad and display operator can work upto 200 mtr from the Drive module.



Smart cooling fan

In dusty environments (like in textile/plastic industry) the cooling fan of the Drive may clog/malfunction due to dust deposits and the Drive may need to be serviced. However in many Drives the cooling fans cannot be removed easily. The BL52/BL50 Drive has detachable cooling fan that can easily be removed for cleaning purpose. The cooling fan operation is temperature dependant i.e. the cooling fan is switched ON when the temperature of the heat sink exceeds the prescribed limit (thereby resulting in reduced energy consumption). Running hours of the cooling fan can also be measured in the Drive parameters.

Higher Ambient Capability

- The Drive has been designed to operate at 50^{o}C without derating.
- This ensures better reliability of the Drive in locations that have higher ambient temperatures.

BL52/BL50 AC VFD RATINGS AND SALIENT FEATURES:

- BL52 VFD Ratings: 0.4kW to 132kW (1 HP to 150 HP) (400V class)
- BL50 VFD Ratings: 0.4kW to 3.7kW (0.5 HP to 5 HP) (400V class)
- BL50 VFD Ratings: 0.2kW to 3.7kW (0.25 HP to 5 HP) (200V class) Single/Three Phase
- Input AC Supply: 3 Phase, Range 380V - 480V (+ 10%, -15%); 50Hz/60Hz
- Input AC Supply: 1 Phase/3 Phase, Range 200V - 240V (+ 10%, -15%); 50Hz/60Hz
- Control Mode: V/F & Sensorless Voltage Vector Control (SVVC)
- Excellent Starting Torque: 150% @ 0.5Hz in SVVC Mode/150%@1.5Hz in V/F mode
- 16 Preset speeds with Timer functions for multispeed profile
- Scope Function to assist in commissioning, troubleshooting and diagnosis
- I/Os for BL52 upto 5.5kW H.D/7.5kW N.D:
  Analog Input-1
  Analog output-1
  Digital Input-4
  Digital Output-1
- I/Os for BL52 VFD from Rating 7.5kW H.D/11kW N.D:
  Analog Input-2
  Analog Output-2
  Digital Input-7
  Digital Output-1
  Relay Output-2
- High speed Pulse input (50kHz) & Pulse Output signal (32kHz)
- Built in Modbus Communication protocol
- IP20 Enclosure (Fan cooled)
- Built in Brake Chopper upto 30kW for BL52 VFD (Above 30kW-optional Brake Unit)
- Drive Protections: Drive Output Short circuit, Under Voltage/Over Voltage, Overload, Over Temperature, Ground Fault, Current Hunting Prevention, Stall Prevention
- Built in PID Control, Torque Boost Function, Speed Search Function, Speed Skip Function
- AC/DC Input Choke: optional (Recommended for Drive Protection & THD Reduction)
- Brake Resistor for Dynamic Braking: External Option (ratings depends on application)
- CE Certified and Compliance with EU RoHS Standards
- I/Os for BL50 VFD upto 3.7kW:
  Analog Input-1
  Analog Output-1
  Digital Input-6
  Relay output-1

SOME APPLICATIONS OF BL52/BL50 AC VFD

Packaging Machines

Plastic Machines

Textile Machines

Fans & Blowers

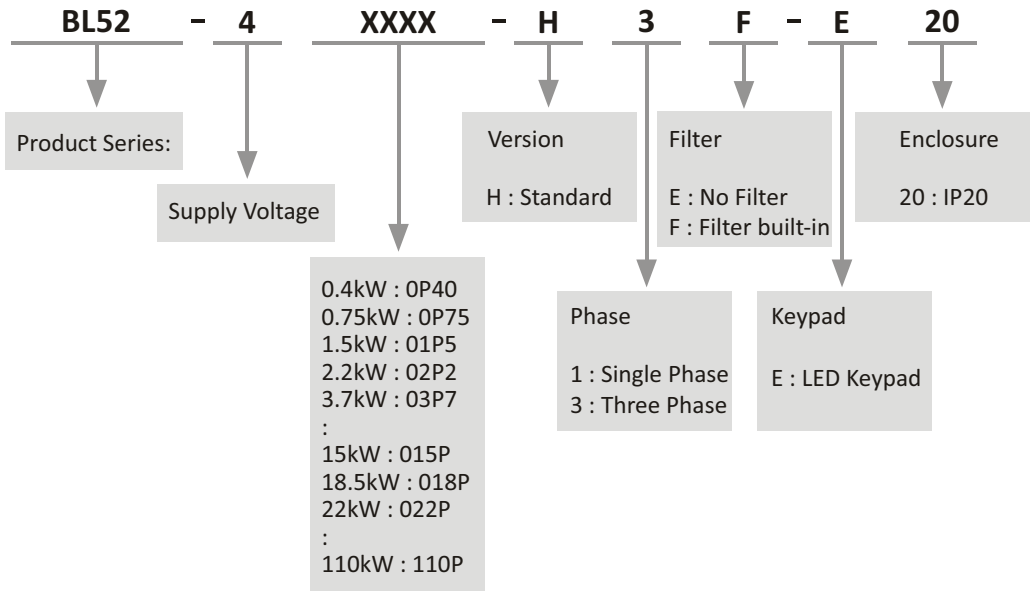
Pumps / Compressors

High Speed Spindles

Conveyors / Mixers

Cranes

BL52 NOMENCLATURE & RATINGS



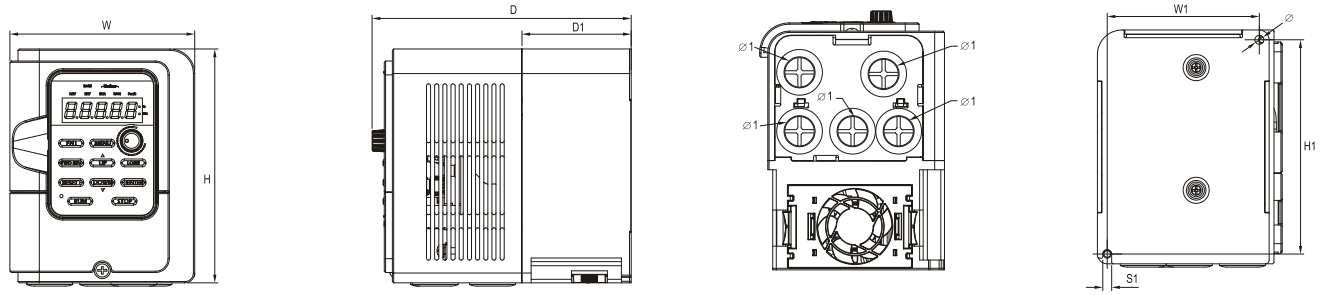
BL52 Drive Power Ratings

400V Class																				
Model No.	**BL52-XXXX-H3-E20**		0P40	0P75	01P5	02P2	03P7	05P5	07P5	011P	015P	018P	022P	030P	037P	045P	055P	075P	090P	110
Max. Motor Capacity	**HP**	**HD**	0.5	1	2	3	5	7.5	10	15	20	25	30	40	50	60	75	100	125	150
		ND	1	2	3	5	7.5	10	15	20	25	30	40	50	60	75	100	125	150	175
	kW	**HD**	0.4	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90	110
		ND	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90	110	132
Rated Input	**Voltage/Frq**		**3 Phase, 380˜480V, -15%˜+10%, 50/60Hz**																	
	Current	**(ND)**	2.8	5	6.5	9.6	15.2	20.4	34	42	45.6	54	78	93.6	102	125	150	180	210	250
		(HD)	2.2	4.1	5.1	6.6	11.4	15.2	25.1	34	38.4	45.6	58.5	78	85	102	125	150	180	210
Rated Output	**Current**	**(ND)**	2.3	4.1	5.4	8	12.6	17	25	31	38	45	60	72	92	115	150	180	215	248
		(HD)	1.8	3.4	4.2	5.5	9.5	12.6	18.5	25	32	38	45	60	75	92	115	150	180	215
	Frame Size		1				2		3		4		5		6			7		
	Output Frequency(Hz)		**0˜400Hz (Optional 2000Hz)**																	
	Carrier Frequency (kHz)		2˜12						2˜15						2˜12			2˜10		
Cooling Method			Fan																	

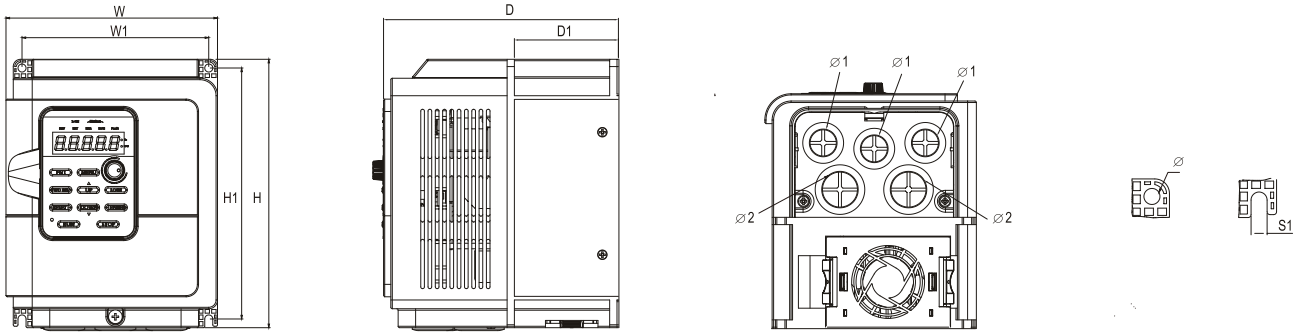
BL52 DIMENSIONS

Dimensions of BL52 VFD in mm.												
Frame size	W	W1	H	H1	D	D1	S1	⌀	⌀1	⌀2	⌀3	⌀4
1	113	93	143	131	159	151	5.5	5.5				
2	145	128	184	172	168	161	5.5	5.5	22	28		
3	225	202	260	242	198	190	6.5	6.5	22	35	44	
4	235	212	340	322	218	210	6.5	6.5	22	28	28	35
5	281	257	385	367	219	211	6.5	6.5	22	28	35	44
6	304	270	550	530	315	0	11	11				
7	344	260	665	640	350	0	11	0	11	19		

Frame 1



Frame 2



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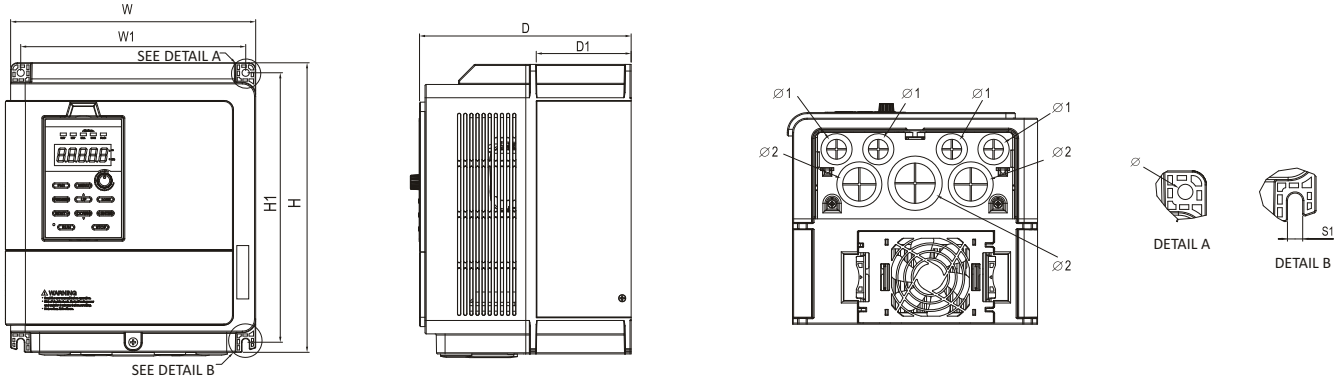
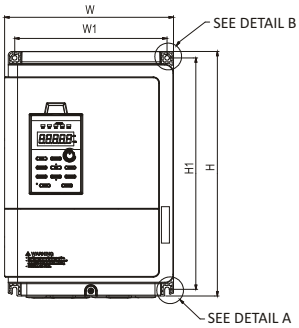
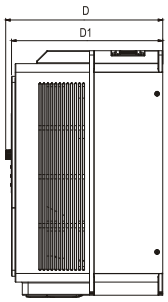
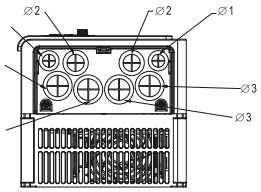


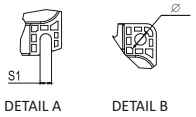
BL52 DIMENSIONS

Frame 4









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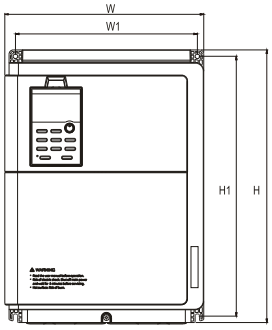
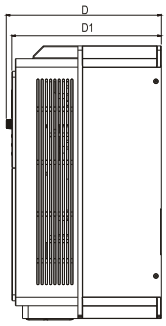
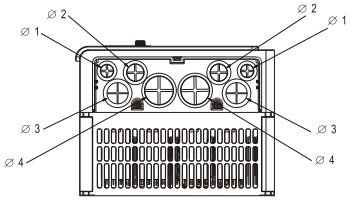
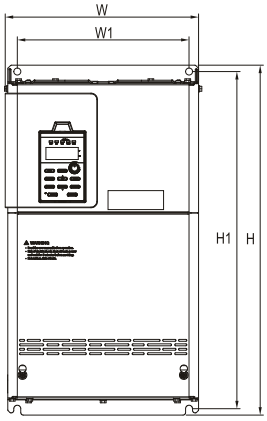
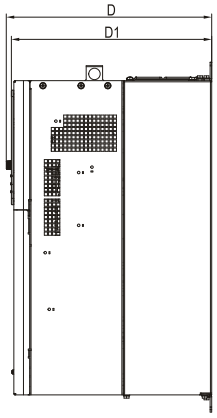


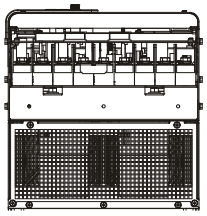


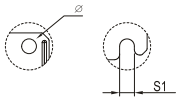


Frame 6









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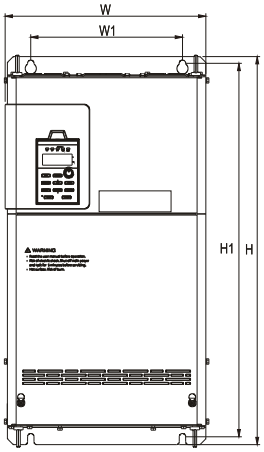
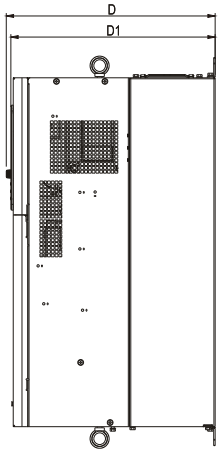
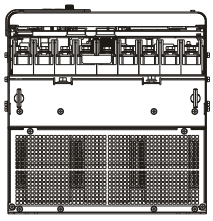
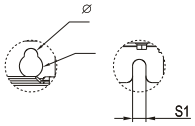


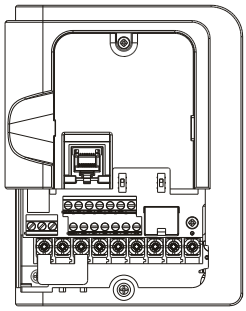


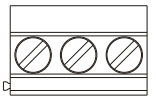




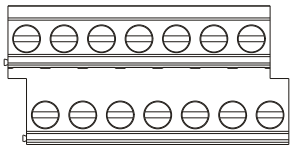
BL52 TERMINALS

- 400V F1~ F2



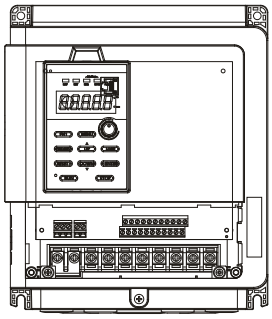


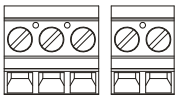
R1A	R1B	R1C



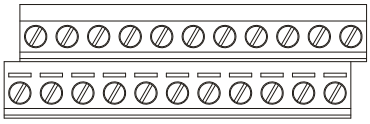
V	A2	AC	AM	D1	DC	S4C
+24V	COM	S1	S2	S3	S4	PE

- 400V F3~ F7





R1A	R1B	R1C	R2A	R2C



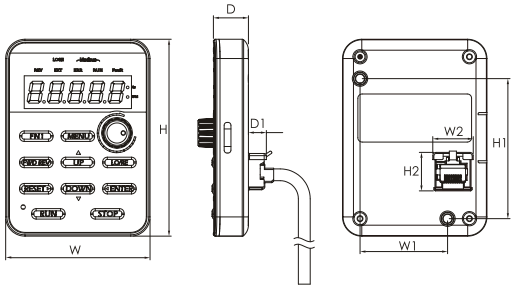
V+	A1	A2	S1	S3	S5	S7	S7C	MP	DC	D1
AC	FM	AM	24V	S2	S4	S6	COM	D+	D-	PE

Keypad Dimensions

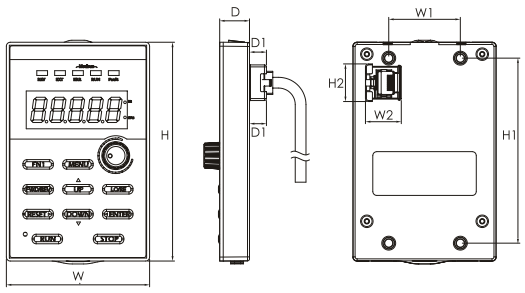
Unit : mm

FRAME	W	W1	W2	H	H1	H2	D	D1
F1 - F2	66	40	18.5	90	64	17.6	16	8.2
F3 - F7	77	36	18	110	93	18.9	15	8.5

- F1 - F2



- F3 - F7



BL52 GENERAL SPECIFICATION

	Item	Specification
Control Characteristic	Control Method	V/F, Sensorless Voltage Vector Control (SVVC)
	Ouput Frequency	0~400Hz (optional upto 2000Hz for High speed applications with declaration as per clause 3D225/3A225 of Annexure 1 of E.U Regulation)
	Frequency Accuracy	Digital reference: within ±0.01% of the Max. output freqeuncy
		Analog reference: within ±0.1% of max. output frequency
	Frequency Setting Resolution	Digital input: 0.01Hz
		Analog Output: 1/1000 of max. frequency
	Starting Torque*	150% / 1.5Hz (V/F)
		150% / 0.5Hz (Sensorless Voltage Vector Control)
	Speed Control Range*	1: 40 (V/F)
		1:200 (Sensorless Voltage Vector Control)
	Speed Control Accuracy	±0.2% in Sensorless Voltage Vector Control
	Speed Response	> 5 Hz in Sensorless Voltage Vector Control
	Acc/Dec Time	0.0 ~ 6000.0 sec
	Braking Response	approx. 20%
	V/F Pattern	15 fixed and 1 programmable
	Overload Capacity	150% for 1 min. within every 10 min.(HD)/ 120% for 1 min (ND); 180% for 10 sec; 200% for 1 sec.
Operating Environment	Area of Use	Indoor without corrosive gas/liquid or flammable gas/liquid/oil mist/dust
	Ambient Temperature	-10° C~+50°C,-10°C~+40°C (NEMA type1),below 90% RH without froze or condensation
	Storage Temperature	-20°C ~ +60°C
	Altitude	Up to 1000 meters
	Vibration	Below 9.8 m/s2 (10 ~ 20Hz), below 5.9 m/s2 (20 ~ 55Hz)
	Enclosure	IP20, NEMA1 (with NEMA kit option)
Number of I/O F1-F2	Analog Input (AI)	1 points (A2: 0 ~ 5V, 0 ~ 10V, 0 or 4 ~ 20mA)
	Digital Input (DI)	200V : 5 points 400V : 4 points
	Analog Output (AO)	200V : FM 0~ 10V 400V : AM 0~10V / 0 or 4 ~ 20mA
	Digital Output (DO)	1 point
	Relay Output (RO)	1 point
Number of I/O F3-F7	Analog Input (AI)	2 points (A1: 0 ~10V, -10 ~ 10V / A2: 0 or 4 ~ 20mA , 0 ~ 10V, 0 ~ 5V)
	Digital Input (DI)	7 points
	Analog Output (AO)	2 points (FM : 0~10V, -10V~10V / AM : 0 or 4~20mA ,0~10V)
	Digital Output (DO)	1 point
	Relay Output (RO)	2 points
	Pulse Input (PI)	1 point (1 Common digital input point)
	Pulse Output (PO)	1 point
	Built-In	Modbus (RS-485), communication at max. speed 115200 bps

* The data is tested under laboratory environment conditions.

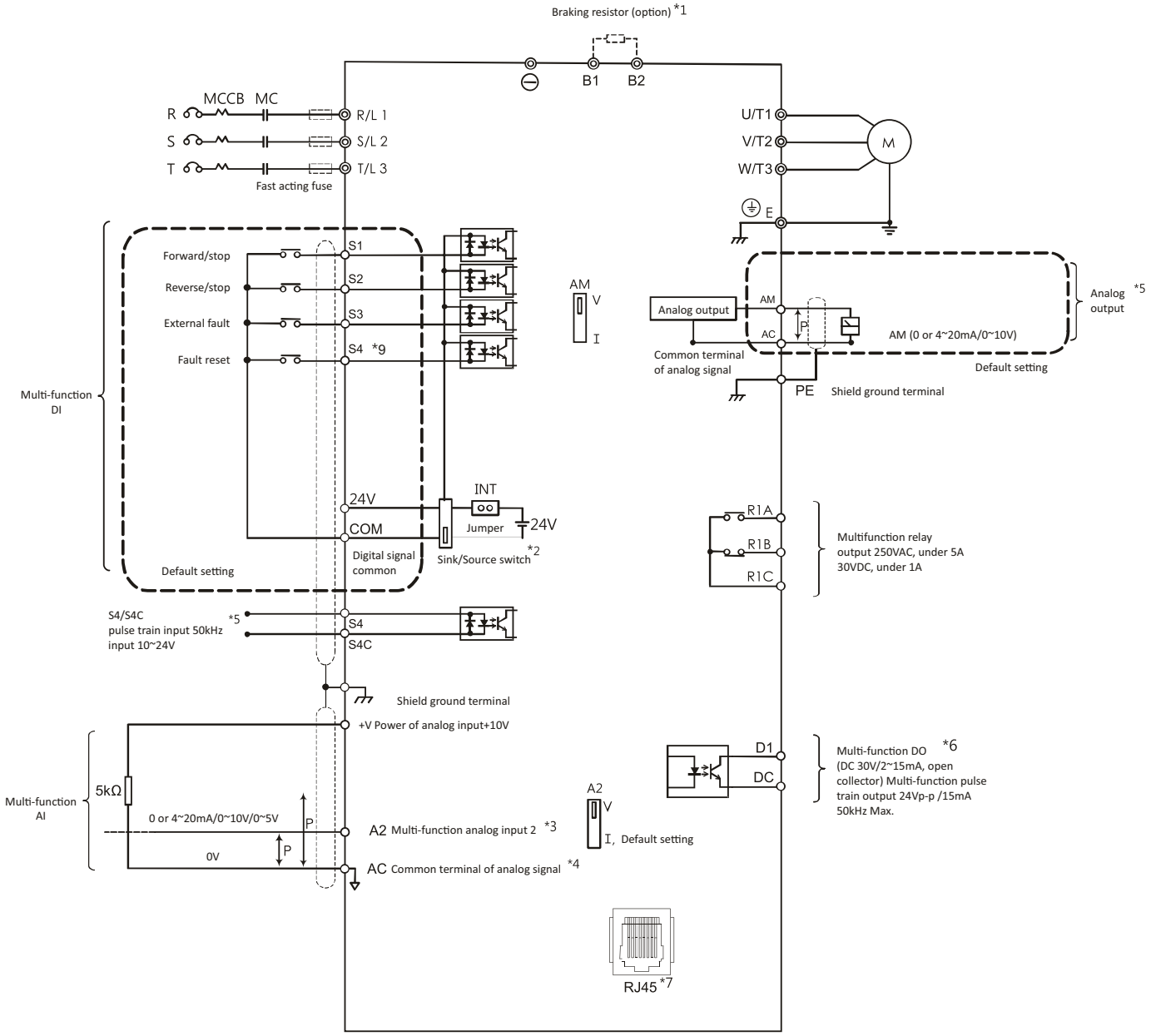
BL52 TERMINAL BLOCK DESCRIPTION

BL52 AC VFD 400V F1~F2 Frame size 0.4kW HD to 5.5kW HD

Type	Terminal Name	Code	Terminal Description	
Main Circuit (400V)	AC power input	R/L1	Input power terminal	
		S/L2		
		T/L3		
	Braking Chopper	B1	Braking Chopper Transistor built-in. (Dynamic Brake Resistor-optional as per application)	
		B2		
	DC Power negative input	-	DC Power negative input	
	AC drive output	U/T1	Please connect to AC Motor Terminals	
		V/T2		
		W/T3		
Control Circuit	Digital input terminal 1	S1	Photo coupler: input voltage 24V/ 8mA default setting on sink mode. Use Sink/Source DIP switch on the control board to set sink/source mode for multi-function digital inputs.	ON : Forward /OFF : Stop
	Digital input terminal 2	S2		ON : Reverse /OFF : Stop
	Digital input terminal 3	S3		External fault 1 (normal open)
	Digital input terminal 4	S4		Fault reset
			Pulse input terminal 50kHz	Frequency command
	Digital input common	S4C	Common terminal of digital input	
	Digital output terminal 1	D1	Programmable digital output terminal, Photo coupler output	Zero speed
	Digital output common	DC	Digital output terminal	
	Digital input signal power	+24V	Digital control signal common +24V/200mA	
	Auxiliary power	+V	Auxiliary power terminal for analog input +10V/5mA	
	Analog input terminal 2	A2	Programmable analog input 0 or 4~20mA / 0~10V / 0~5V	
	Analog output	AM	Programmable analog output 0 or 4~20mA / 0~10V	
	Analog signal common	AC	Common terminal of analog signal	
	Relay 1	R1A	Normal open terminal	Relay output DC30V 3A AC250V 5A
		R1B	Normal closed terminal	
		R1C	Common terminal	
Com.	RS-485 port	RJ45	To connect RS-485 communication at max. speed 115200 bps	

BL52 WIRING DIAGRAM

BL52 AC VFD-400V-Frame size F1 & F2 upto 0.4kW HD to 5.5kW HD



◎ indicates main circuit

○ indicates control circuit

indicates shielded cable

IP indicates twisted-pair shielded cable

Notes:

*1. When using braking resistor, please ensure stall prevention function is off.

*2. Multi-function analog input S1~S7 can be switched between Sink(NPN) or Source(PNP) mode. Default : NPN mode.

*3. Switch A2 is used to set analog input as voltage input or current input.

*4. AC is common terminal of analog signal (Analog Common).

*5. Pulse input and digital inputs share the same terminal (5.5kW or less shared S4,7.5kW more common S7).

*6. Pulse output and digital outputs share the same terminal (5.5kW or less shared S4,7.5kW more common S7).

*7. RJ45 is the communication port of RS-485.

*8. Analog output is used to connect frequency meter, current meter, voltage meter and power meter.

*9. S4 terminal can be used as Digital Input or for Pulse Input Train signal.

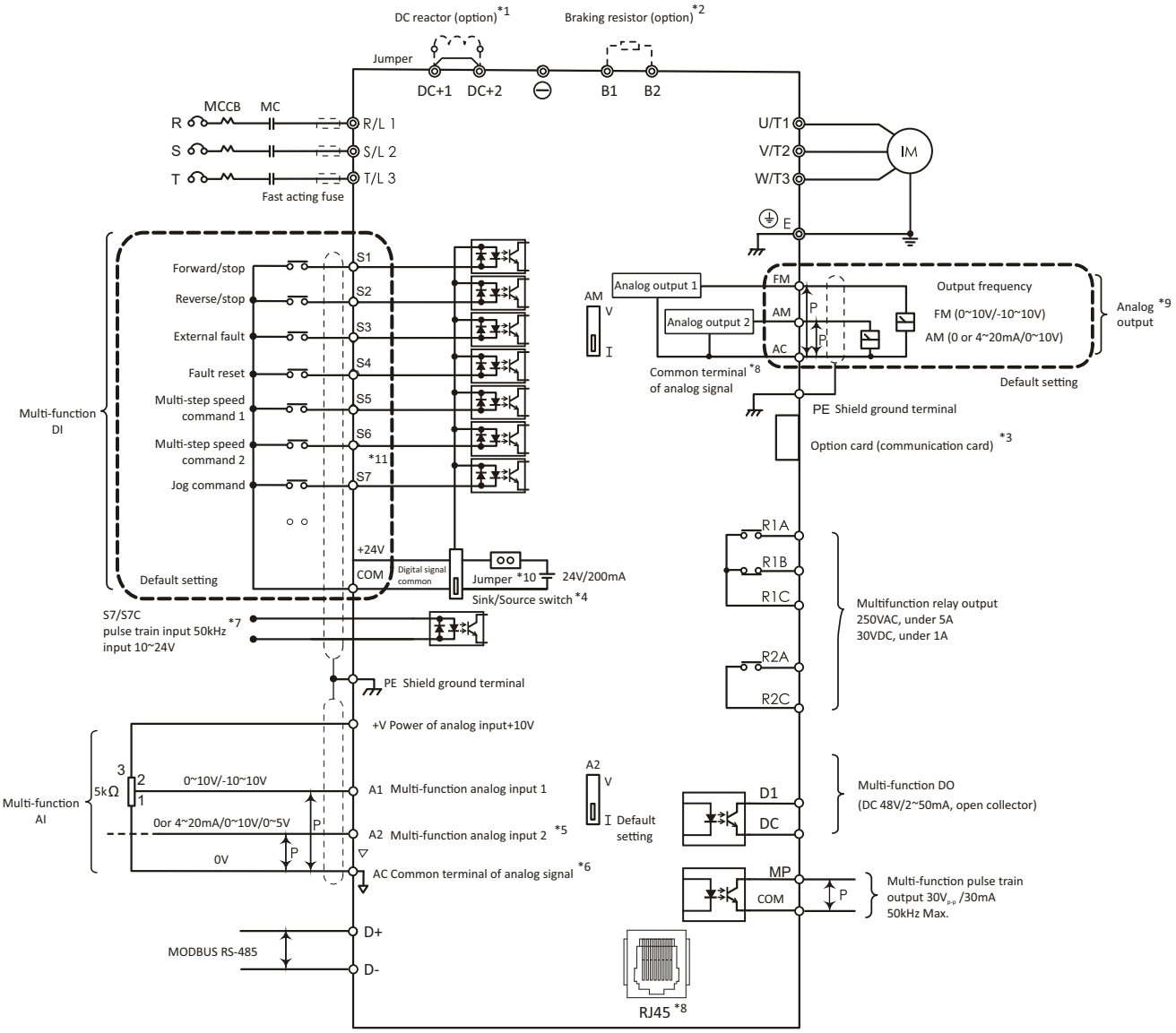
BL52 TERMINAL BLOCK DESCRIPTION

BL52 AC VFD 400V F3~F7 Frame size, 7.5kW HD to 110kW HD

Type	Terminal Name	Code	Terminal Description	
Main Circuit	AC power input	R/L1	Input power terminal	
		S/L2		
		T/L3		
	Braking Chopper	B1	400V Class, ≦30kW: Braking chopper Transistor built-in. Above 37kW; Braking Unit is optional.	
		B2		
	Braking module	DC+	400V Class ≦45kW: Please purchase optional braking module to connect.	
		DC-		
	DC reactor	DC+1/ DC+2	400V class, 11kW~132kW: Please remove the jumper and connect DC reactor to these terminals. 400V class >=45kW: selection of build-in DC reactor is available.	
		P/DC+		
	AC drive output	U/T1	Please connect to AC motor	
		V/T2		
		W/T3		
	Ground terminal	E	Ground terminal for AC drive. Please ensure grounding is properly wired.	
Control Circuit	Auxiliary power	V+	Auxiliary power terminal for analog input +10/ 20mA	
	Analog signal common	AC	Common terminal of analog signal	
	Analog input terminal 1	A1	Programmable analog input 1, 0 ~ 10V / -10 ~ +10V	Main frequency command
	Analog input terminal 2	A2	Programmable analog input 2, 0 or 4 ~ 20mA / 0 ~ 10V / 0~5V	Auxiliary frequency command
	Analog output 1	FM	Programmable analog output, 0 ~ 10V / -10 ~ +10V	Output frequency
	Analog output 2	AM	Programmabl+E6e analog output, 0 or 4 ~ 20mA / 0 ~ 10V	Output current
	Digital input signal power	24V	Power terminal for digital control signal +24V / 200mA	
	Digital input terminal 1	S1	Photo coupler: input voltage 24V/8mA Default setting on sink mode. Use Sink/Source DIP switch on the control board to set sink/source mode for multi-function digital inputs.	ON : Forward / OFF : Stop
	Digital input terminal 2	S2		ON : Reverse / OFF : Stop
	Digital input terminal 3	S3		External fault 1 (normal open)
	Digital input terminal 4	S4		Fault reset
	Digital input terminal 5	S5		Multi-speed frequency command 1
	Digital input terminal 6	S6		Multi-speed frequency command 2
	Digital input terminal 7	S7		
			Pulse input terminal 50kHz / max. input: 10~24V / min input: 0~0.5V	
	Digital input terminal common	S7C	Digital input terminal common	
	Digital input common	COM	Common terminal of digital input	
	Pulse train output terminal	MP	Programmable pulse train output, voltage output 30V_{p-p} / 30mA, max. frequency 50kHz	Frequency command (defaut)
	Digital output terminal 1	D1	Programmable digital output terminal,Photo coupler output 48V/2~50mA	
	Digital output common	DC	Digital output terminal	
	RS-485 port	D+	To connect RS-485 communication at max. speed 115200 bps	
		D-		
	Shielded Ground	PE	Ground terminal for control signal shielded cable to effectively suppress external interference. Please ensure this is properly wired.	
	Relay 1	R1A	Normal open terminal	Relay output DC30V 3A AC250V 5A
		R1B	Normal closed terminal	
		R1C	Common terminal	
	Relay 2	R2A	Normal open terminal 2	
		R2C	Common terminal 2	
Com.	RS-485 port	RJ45	To connect RS-485 communication at max. speed 115200 bps	

BL52 WIRING DIAGRAM

BL52 AC VFD- 400V-Frame Size: F3 to F7 (7.5kW HD to 110kW HD)



◎ indicates main circuit

○ indicates control circuit

indicates shielded cable

indicates twisted-pair shielded cable

Notes:

*1. Please remove DC+(+1/+2) jumper when installing DC reactor.

*2. When using braking resistor, please ensure stall prevention function is off.

*3. J5 is port of optional communication card. Please refer to user manual when installing it.

*4. Multi-function analog input S1~S7 can be switched between Sink(NPN) or Source(PNP) mode. Default : NPN mode.

*5. Switch A2 is used to set analog input as voltage input or current input.

*6. AC is common terminal of analog signal (Analog Common).

*7. Pulse input and digital inputs share the same terminal (5.5kW or less shared S4,7.5kW more common S7).

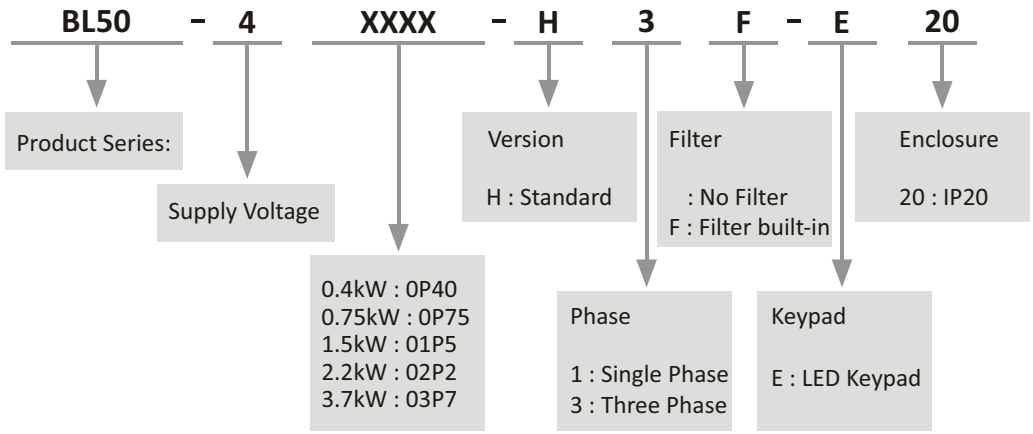
*8. RJ45 is the communication port of RS-485.

*9. Analog output is used to connect frequency meter, current meter, voltage meter and power meter.

*10. Insert the jumper to control board to use the internal 24V signal or remove it to use the external 24V signal.

*11. S7 terminal can be used as Digital Input or for pulse train input signal.

BL50 NOMENCLATURE & RATINGS



200V Class

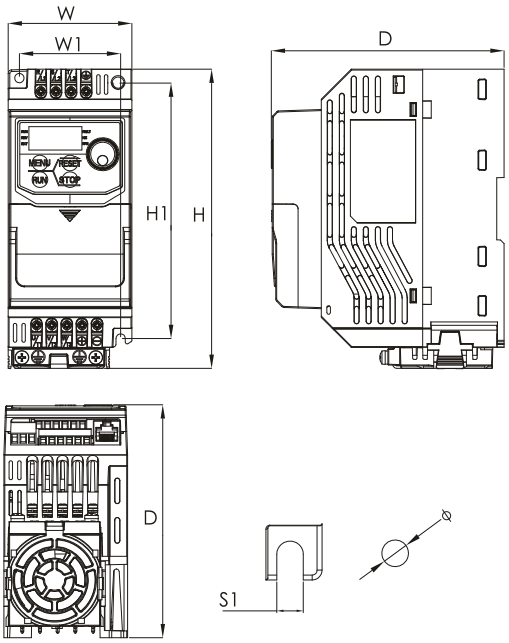
200V Class							
Model	BL50-xxxxx-H1F-E20	20P20	20P40	20P75	201P5	202P2	- -
Frame		1			2		- -
Model	BL50-xxxxx-H3-E20	20P20	20P40	20P75	201P5	202P2	203P7
Frame		1				2	
Max. Motor Capacitor	HP	0.25	0.5	1	2	3	5
	kW	0.2	0.4	0.75	1.5	2.2	3.7
Input Voltage (V)/Frequency (Hz)		Single phase, 3 phases, 200~240 V,-15%~+10%, 50/60Hz					
Rated Output	Current (Amp)	1.6	2.5	4.2	7.5	11	17
	Frequency (Hz)	0 ~ 400Hz					
	Carrier Frequency (kHz)	2 ~ 12kHz					
Cooling Method		Fanless		Fan			

400V Class

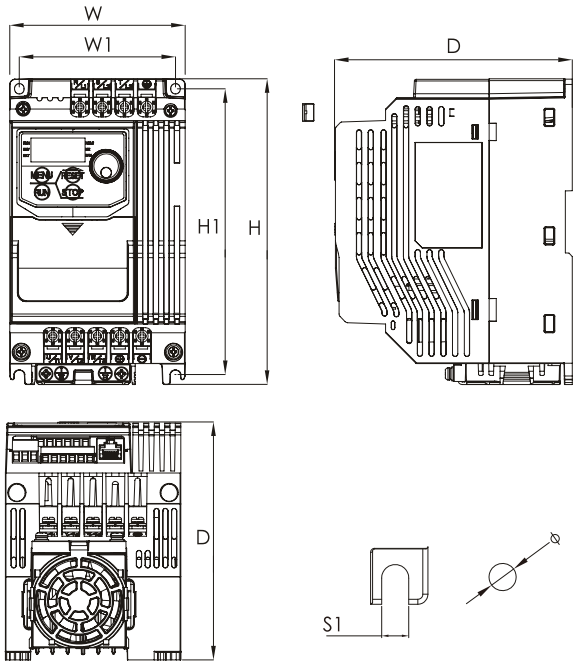
400V Class						
Model	BL50-xxxxx-H3-E20	40P40	40P75	401P5	402P2	403P7
Frame		1			2	
Max. Motor Capacitor	HP	0.5	1	2	3	5
	kW	0.4	0.75	1.5	2.2	3.7
Input Voltage (V)/Frequency (Hz)		3 phases, 380~480 V,-15%~+10%, 50/60Hz				
Rated Output	Current (Amp)	1.5	2.5	4.2	5.5	8.2
	Frequency (Hz)	0 ~ 400Hz				
	Carrier Frequency (kHz)	2 ~ 12kHz				
Cooling Method		Fanless		Fan		

BL50 DIMENSIONS

Frame Size 1



Frame Size 2



Unit : mm

SERIES	FRAME	W	W1	H	H1	D	S1	⌀
BL50 VFD	1	72	59	174.2	151.6	135.6	5.4	5.4
	2	100	89	174.2	162.6	135.6	5.8	5.4

BL50 GENERAL SPECIFICATION

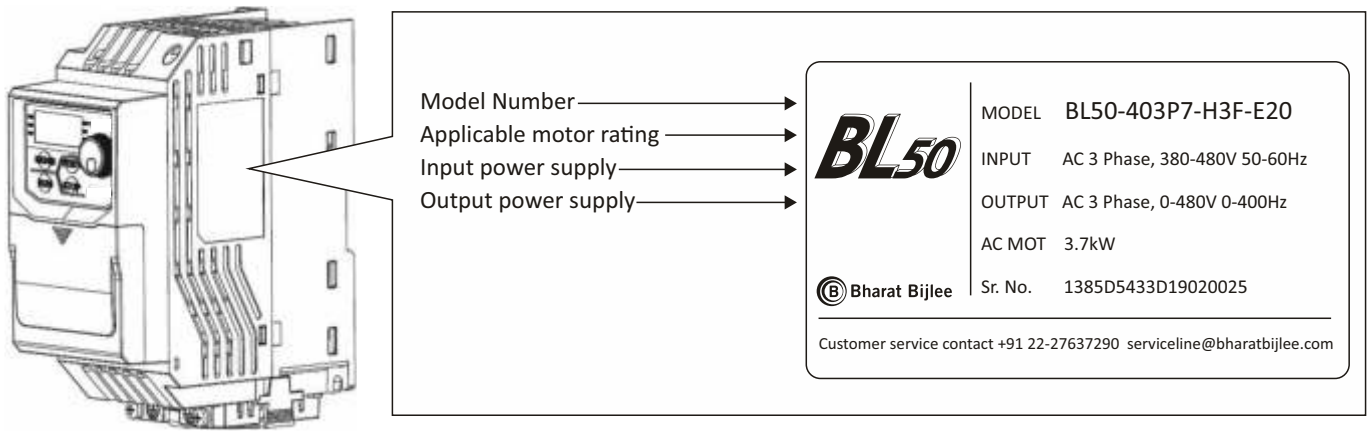
Item		Specification
Comtrol Characteristic	Control Method	V/F, Sensorless Voltage Vector Control (SVVC)
	Output Frequency	0~400Hz
	Frequency Accuracy	Digital reference: within ±0.01% of the Max. output freqeuncy
		Analog reference: within ±0.1% of max. output frequency
	Frequency Setting Resolution	Digital input: 0.01Hz
		Analog Output: 1/1000 of max. frequency
	Starting Torque	150% / 3Hz (V/F) 150% / 1Hz (SVVC)
	Speed Control Range	1: 40 (V/F) 1:100 (SVVC)
	Acc./Dec. Time	0.0 ~ 3600.0 sec
	Braking Torque	approx. 20%
	V/F Patterm	15 fixed and 1 programmable
	Overload Capacity	150% for 1 min. every 10 min.
	Parameter Function	Overtorque / Undertorque Detection, Multi-Speed Operation, Acc. / Dec. Switch, S- Curve Acc. / Dec., 3-Wire Sequence Control, Auto-tuning, Cooling Fan ON / OFF Switch, Slip Compensation, Torque Compensation, Frequency Jump, Upper / lower Limits for Frequency Command, DC Draking at Run / Stop, PID Control including Pause Fuction, Energy Saving Mode, Fault Restart, Traverse, etc.
Operating Environment	Area of Use	Indoor without corrosive gas/liquid or flammable gas/liquid/oil mist/dust
	Ambient Temperature	-10 ^{o}C ~ + 50 ^{o}C, below 90% RH without froze or condensation
	Storage Temperature	-20 ^{o}C~ + 60 ^{o}C
	Altitude	Under 1000 meters
	Vibration	Below 9.8 m/s^2 (10 ~ 20Hz), below 5.9 m/s^2 (20 ~ 55Hz)
	Enclosure	IP20
Number of I/O	Analog Input (AI)	1 point AI : 0 ~ 5V / 0 ~ 10V / 0 or 4 ~20mA
	Digital Input (DI)	6 points
	Analog Output (AO)	1 point FM: 0 ~10V
	Relay Output (RO)	1 point
Build-In		Modbus (RS-485 port)

BL50 TERMINALS DETAILS

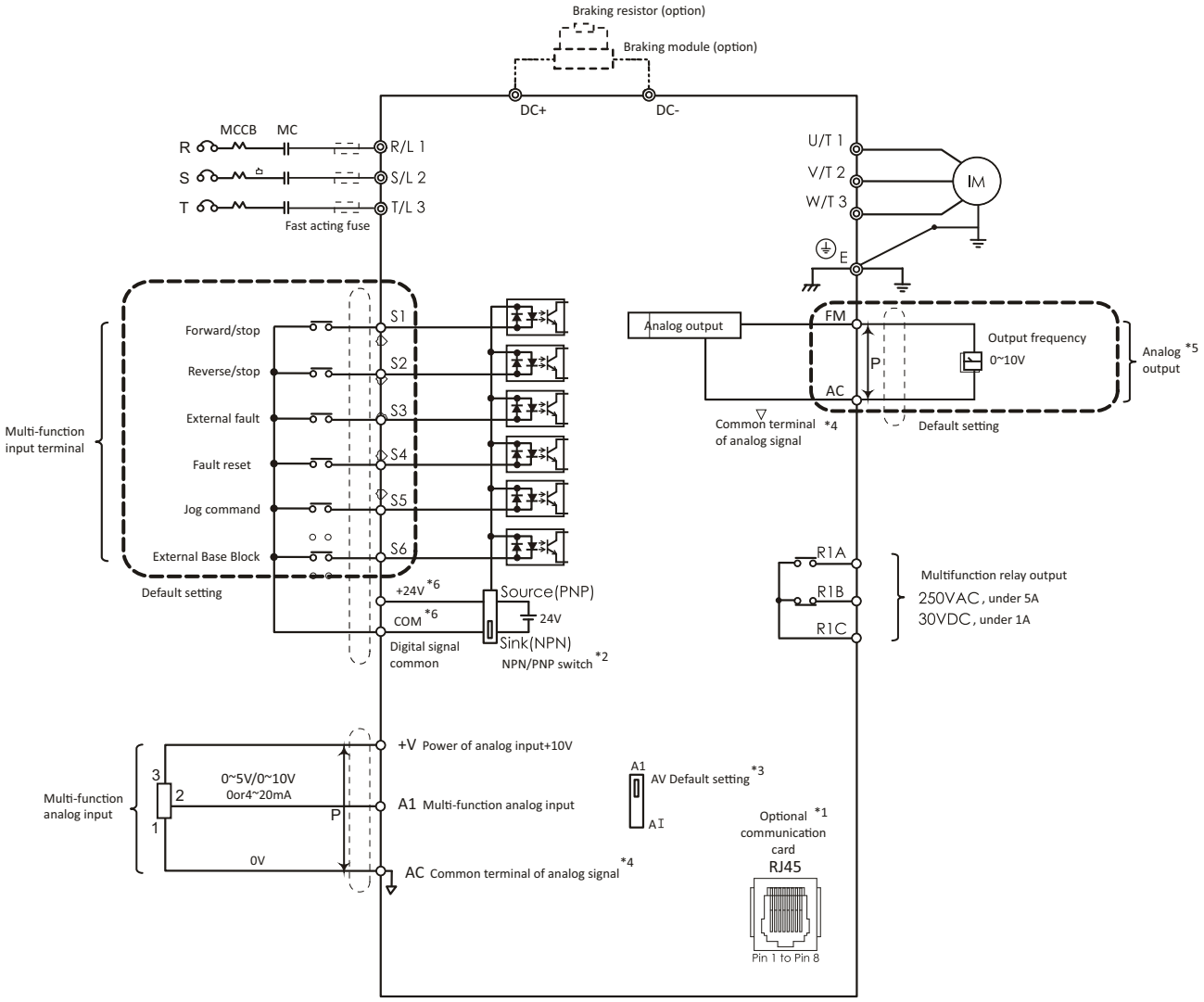
Type	Terminal Name	Code	Terminal Description	
Main Circuit	AC power input	R/L1	Input power terminal	
		S/L2		
		T/L3		
	Braking module	DC+	Please purchase optional braking module to connect.	
		DC-		
	AC drive output	U/T1	Please connect to AC motor	
		V/T2		
		W/T3		
	Ground terminal	E	Ground terminal for AC drive. Please ensure grounding is properly wired.	
Control Circuit	Digital input terminal 1	S1	Photo coupler: input voltage 24V/8mA Default setting on sink mode. Use Sink/Source DIP switch on the control board to set sink/source mode for multi-function digital inputs.	ON : Forward / OFF : Stop
	Digital input terminal 2	S2		ON : Reverse / OFF : Stop
	Digital input terminal 3	S3		External fault (normal open)
	Digital input terminal 4	S4		Fault reset
	Digital input terminal 5	S5		Jog command
	Digital input terminal 6	S6		ON : External baseblock
	Digital input common	COM	Common terminal of digital input	
	Digital input signal power	+24V	Digital control signal common +24V / 50mA	
	Auxiliary power	+V	Auxiliary power terminal for analog input +10 / 5mA	
	Analog input terminal 1	A1	Programmable analog input 0 ~ 5V / 0 ~ 10V / 0 or 4 ~ 20mA	Main frequency command
	Analog input	FM	Programmable analog output, 0 ~ 10V	Output frequency
	Analog signal common	AC	Common terminal of analog signal	
	Relay	R1A	Normal open terminal	Relay output DC30V 1A AC250V 3A
		R1B	Normal closed terminal	
		R1C	Common terminal	
Com.	RS-485 port	RJ45	To connect RS-485 communication at max. speed 38400 bps	

Notes:
*1. This catalogue includes the blueprint of our products in the future. For more precise specifications, please refer to the quick start that alongside with our products. If you have any question, please contact our authorized distributors or BB.

Nameplate



BL50 WIRING DIAGRAM



◎ indicates main circuit

○ indicates control circuit

indicates isolation cable

P indicates twisted-pair isolation cable

Notes:

*1. RJ45 is port of optional communication card. Please refer to user manual when installing it.

*2. Multi-function analog input S1~S6 can be switched between Sink(NPN) or Source(PNP) mode. Default: NPN mode.

*3. A1 is used to set analog input as voltage input or current input.

*4. AC is common terminal of analog signal (Analog Common).

*5. Analog output is used to connect frequency meter, current meter, voltage meter and power meter.

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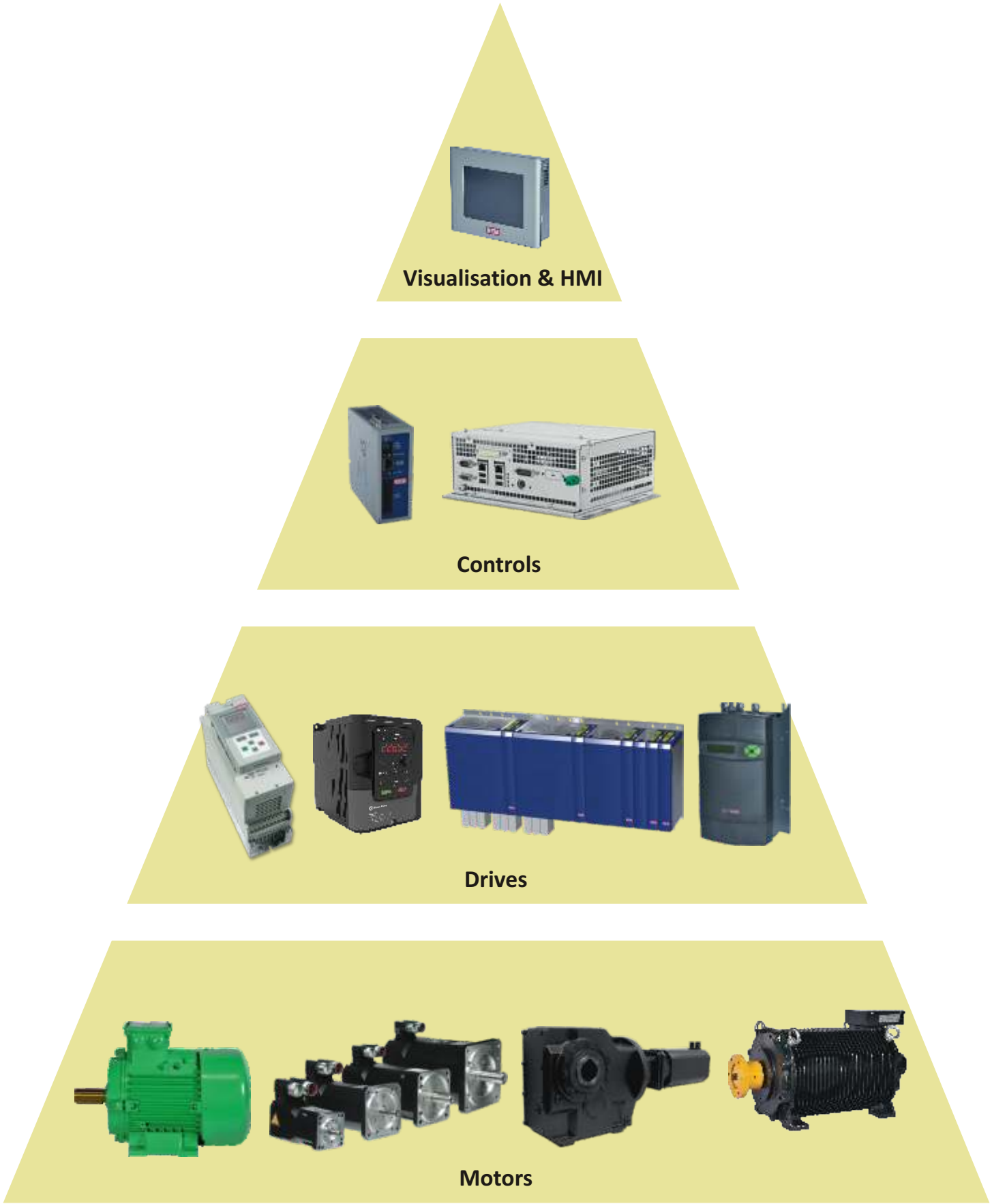

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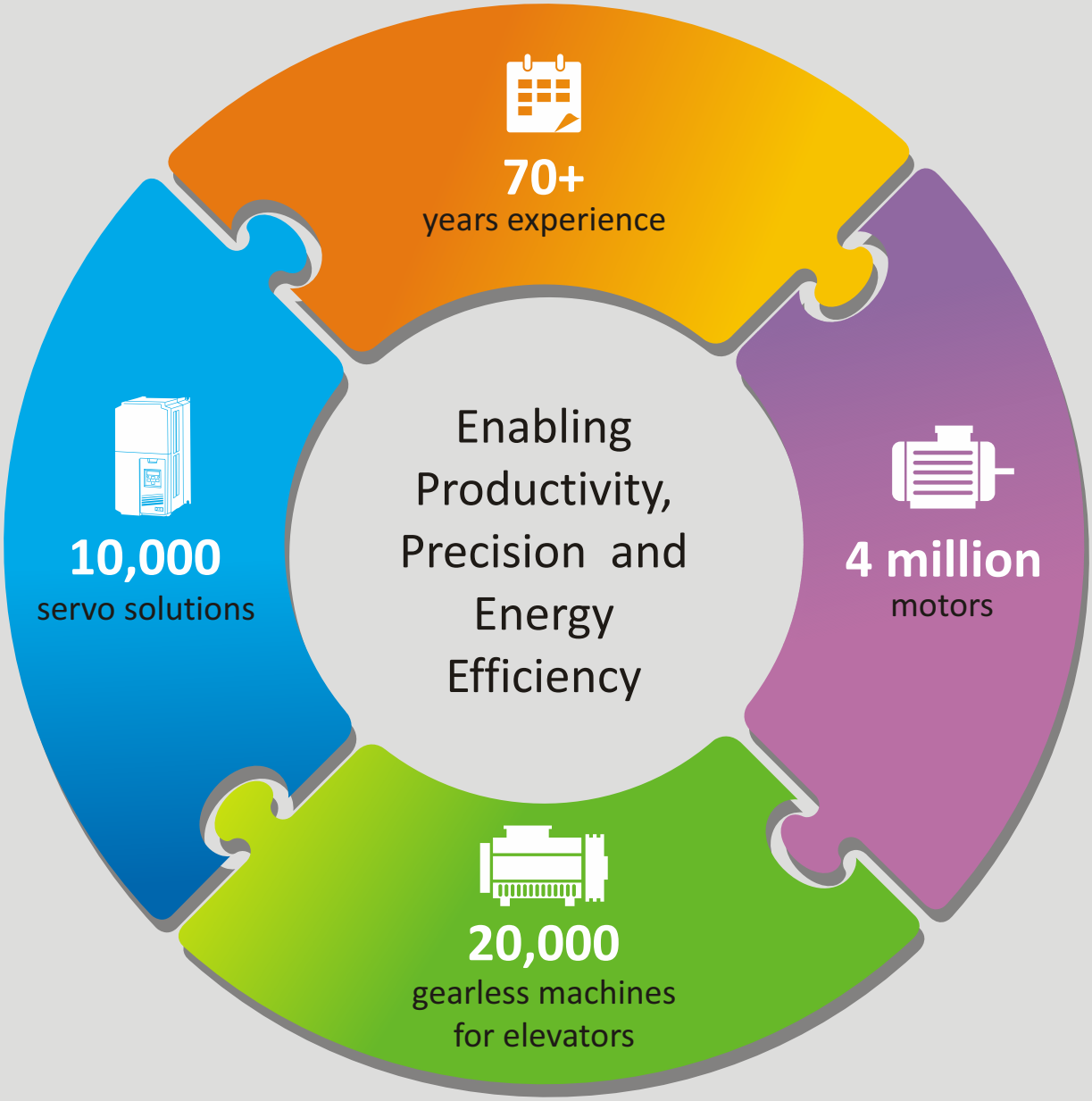
INDUSTRIAL SYSTEM SOLUTIONS



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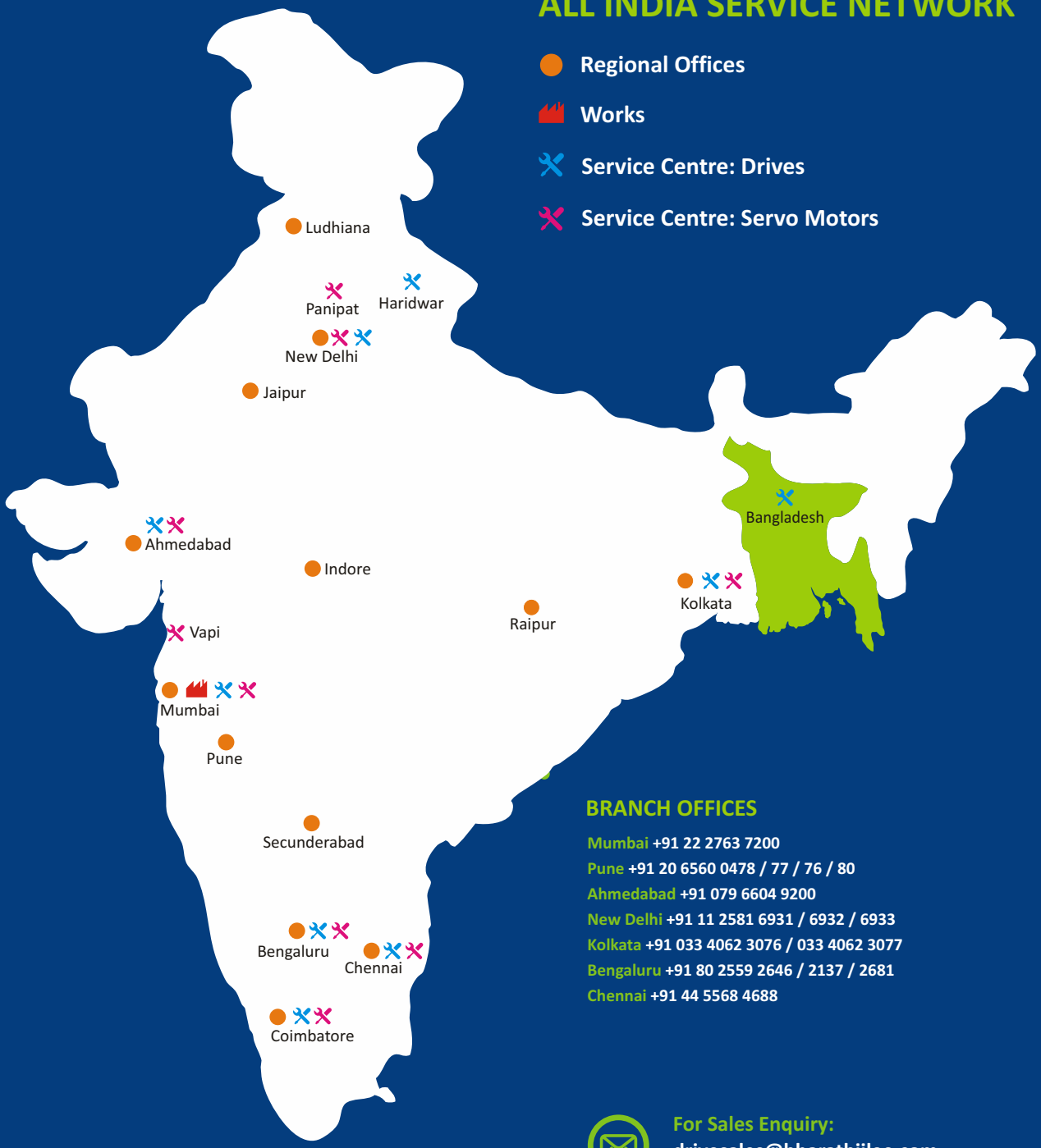
- Service Centre: Servo Motors



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For Sales Enquiry:
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REGISTERED OFFICE
Electric Mansion, 6th Floor,
Appasaheb Marathe Marg,
Prabhadevi, Mumbai 400 025
T: +91 22 2430 6237 / 6375
E: info@bharatbijlee.com
CIN: L31300MH1946PLC005017

WORKS
No. 2, MIDC Thane-Belapur Road, Airoli,
Navi Mumbai 400 708
T: +91 22 2763 7200 / +91 22 2760 0401

www.bharatbijlee.com

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