

ABB - INTEGRATED MOTOR DRIVES (IMD)

LFH – High Performance

Direct drive solution for HVLS fans High-volume, low-speed



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ABB is your trusted advisor for sustainable, reliable and easy-to-use integrated motor drives.

ABB's high efficient LFH motors produce high torque at low speed making them one of the most reliable and sustainable technologies available in the market today.

Trust ABB to provide the latest and most innovative motor solutions to meet your needs.

LFH direct drive solution High-volume, low-speed direct drive solution



High efficiency

- Highest system efficiency
- Innovative and practical way to turn a fan

 without unnecessary components
- Performance data independently tested and verified



Eco-friendly design

- Removes seals and leaking oil required by gearing in traditional systems
- Eliminates high maintenance mechanical components



Variable speed operation

- Ideal for high-volume, low-speed fans
 Match motor to impeller speed for optimized performance
- Improved efficiency when running at partial speed

کر Easy to use

- Eliminate gearing and maintenance items
- Bearings are permanently sealed-for-life



Plug-and-play

- Minimal set-up required
- Start/stop configuration using speed potentiometer to for ease of control
- LED indicator for motor health

Reliable and quiet operation

- Reduced mechanical stresses with low starting current, increasing reliability
- Ultra-quite operation eliminating high speed noise



Reliability. Silent operation. Practicality. It all counts.

Large industrial and commercial buildings can benefit greatly from increased air circulation, and HVLS (high-volume, low-speed) fans are part of the solution. These fans are capable of efficiently circulating a high volume of air throughout large spaces, making them ideal for commercial buildings, warehouses and gyms. If you are looking to improve air circulation, consider HVLS fans with ABB LFH direct drive. Say goodbye to the noisy, inefficient and high-maintenance fans of the past. Switch to a modern, reliable and efficient solution.

ABB: your timely, transformative and trusted provider of Integrated Motor Drive (IMD) solutions.



Sustainability

ABB is committed to providing innovative solutions that prioritize operational efficiency, enhance building comfort and contribute to sustainable practices. With that in mind, we are excited to introduce our latest motor solution – LFH. LFH is a practical design that is innovative, energy

efficient and offers quieter operation. It's a game-changer for anyone looking to improve their building's performance and reduce their carbon footprint.

Old HVLS system

- Not as efficient
- More wear components
- Oil and environmental contaminants
- Higher and vibration



New direct drive system

- Efficient design
- No gearbox
- No maintenance components
- No oil
- Less structural support
- Quieter operation
- Compact design

LFH solution Details make a difference

This cutting-edge technology is built and designed for practical operation, making it the perfect solution for HVLS industrial fans ranging from 6.5 - 23ft (2-7m) in blade diameter. With an IP65 rating for durability, it can operate in a variety of environments. Get ready to experience a more efficient and reliable solution with the LFH integrated motor and drive.



LFH solution Ordering Information

Product Series	Frame	Product	roduct Code						
LFH	110	E	0	н	0P8	ΗE	D	1	
		' 1	2	3	4 5	67	8	1	

temperature

Product Series		
LF		Low speed fan = LFH
н		Industry = HVAC
Frame		Description
11x		Aluminum
xx0		Standard Version
Position 1		Version
E		Axial Mount (TEAO)
Position 2		Voltage
0	230/460 V	3-Phase
6	115/230 V	1-Phase
Position 3		Power Type
н		Horsepower
Position 4,5		Power Rating (HP)
0P4		0.4
0P7		0.7
0P8		0.8
0P9		0.9
1P1		1.1
Position 6		Frame
F		220 LFH
G		360 LFH
н		360 H60 HP
Position 7		Frame
E		Axial Mount (TEAO)
Position 8		Base Speed (r/min)
A		250
В		200
С		160 or 163
D		90 or 95
E		81 or 84

Environmental					
Enclosure	IP65				
Operating Temperature (Full Power)	-15 to 40 °C (5 to 104 °F)				
Operating Temperature (Reduced Powe	er) -20 to 60°C (-4 to 140 °F)				
Storage Temperature	-20 to 80°C (-4 to 176 °F)				
Max shaft axial load	50kg (110lbs)				
Bearings	Permanently sealed				
Temperature Limits: Motor	F				
Motor insulation class	F				
	125°C (120°C before derating)				
Maximum motor temperature	257°F (248°F before derating)				
Temperature Limits: Electronics					
Power module maximum	85°C (80°C before derating				
temperature	185°F (176°F before derating)				
PCB maximum	80°C (75°C before derating)				

176°F (167°F before derating)

LFH Ordering Information

LFH220 catalog numbers and ratings



ABB Catalog Number	Frame Size	Stack Height	Impeller Diameter m (ft.)	Motor Power kW (Hp)	Max Speed (RPM)	Torque nm (lb-ft)	Voltage (V/Phase)	Eff.(%)
	1 5220	1120	2	0.22 (0.2)	170	124(0.2)	460 3PH	72.2
LFHIIDEOHOPSFEA	LFZZU	пзо	2111 (0.511)	0.22 (0.3)	170	12.4 (9.5)	230 3PH	76.6
	1 5220	420	2m (6 Eft)	0.22 (0.2)	170	124(0.2)	115 1PH	75.4
LFHIIDEOHUPSFEA	LFZZU	про	2111 (0.511)	0.22 (0.3)	170	12.4 (9.5)	230 1PH	73.3
				0.8 (1.1)	250	31 (23.1)	460 3PH	81.2
			2 5m (8 2ft)	0.7 (0.9)	250	26 (18.9)	230 3PH	84.3
			2.511 (0.211)	0.37 (0.5)	150	24 (17.5)	460 3PH	75.2
				0.30 (0.4)	150	19 (14)	230 3PH	79.5
			3m (9.84ft)	0.5 (0.7)	200	25 (18.4)	460 3PH	79.7
	1 5220			0.45 (0.6)	200	21 (15.8)	230 3PH	83.3
LFHIIDEUHIPIFEA	LF220	про		0.22 (0.3)	110	19 (14.3)	460 3PH	71.7
				0.15 (0.2)	110	13 (9.5)	230 3PH	76.9
			4m (13.12ft)	0.37 (0.5)	140	25 (18.8)	460 3PH	74.2
				0.30 (0.4)	140	20 (15)	230 3PH	78.8
				0.15 (0.2)	75	19 (14)	460 3PH	63.8
				0.15 (0.2)	75	19 (14)	230 3PH	71.5
			2.5m (8.2ft)	0.7 (0.9)	250	26 (18.9)	115/230 1PH	84.3
				0.30 (0.4)	150	19 (14)	115/230 1PH	79.6
	1 5220		2	0.45 (0.6)	200	21 (15.8)	115/230 1PH	83.3
LFHIIDEGHOFSFEA	LFZZU	про	3m (9.84ft)	0.15 (0.2)	110	13 (9.5)	115/230 1PH	76.9
			4m(12.12ft)	0.30 (0.4)	140	20 (15)	115/230 1PH	78.8
			4111 (13.1211)	0.15 (0.2)	75	19 (14)	115/230 1PH	71.5
				0.6 (0.8)	160	36 (26.3)	460 3PH	80.9
	1 5220	H70	4m(12.12ft)	0.5 (0.7)	160	31 (23)	230 3PH	83.2
LENIIVEOHOPSFEC	LF220	пто	4111 (13.1211)	0.30 (0.4)	95	30 (22.1)	460 3PH	75.1
				0.22 (0.3)	95	23 (16.6)	230 3PH	77.9
	1 5220	470	4m(1212f+)	0.5 (0.7)	160	31 (23)	115/230 1PH	83.2
	LFZZU	Π/Ο	4m (13.12tt)	0.22 (0.3)	95	23 (16.6)	115/230 1PH	77.9

LFH Ordering Information

LFH360 catalog numbers and ratings



ABB Catalog Number	Frame Size	Stack Height	Impeller Diameter m (ft.)	Motor Power kW (Hp)	Max Speed (RPM)	Torque nm (lb-ft)	Voltage (V/Phase)	Eff.(%)
			2 5 (0.2(t))	0.6 (0.8)	200	28 (21)	460 3PH	75.6
			2.5m (8.2ft)	0.5 (0.7)	163	31 (22.6)	230 3PH	74.7
				0.6 (0.8)	190	30 (22.1)	460 3PH	74.9
			2 (0.0.46+)	0.5 (0.7)	163	31 (22.6)	230 3PH	74.7
LEH110E0H0P8GEB	LE360	H20	3m (9.84m)	0.45 (0.6)	160	27 (19.7)	460 3PH	73.7
	21 300	HZU		0.45 (0.6)	160	27 (19.7)	230 3PH	76.0
			4m (13.12ft)	0.15 (0.2)	110	13 (9.5)	460 3PH	67.9
				0.15 (0.2)	110	13 (9.5)	230 3PH	72.1
				0.37 (0.5)	100	36 (26.3)	460 3PH	62.1
				0.37 (0.5)	100	36 (26.3)	230 3PH	64.0
			5m (16.5ft)	0.30 (0.4)	95	30 (22.1)	460 3PH	78.2
				0.30 (0.4)	84	34 (25)	230 3PH	81.4
				0.6 (0.8)	80	71 (52.5)	460 3PH	73.6
				0.5 (0.7)	72	69 (51.1)	230 3PH	72.9
				0.30 (0.4)	75	38 (28)	460 3PH	76.4
		440	6m(10.60ft)	0.30 (0.4)	75	38 (28)	230 3PH	79.9
LFHIIDEDHOP4GED	LF300	H4U	6111 (19.6911)	0.45 (0.6)	65	66 (48.5)	460 3PH	69.5
				0.45 (0.6)	65	66 (48.5)	230 3PH	71.6
				0.22 (0.3)	45	47 (35)	460 3PH	65.7
			7m(22.97f+)	0.22 (0.3)	45	47 (35)	230 3PH	69.8
			111(22.9711)	0.30 (0.4)	40	71 (52.5)	460 3PH	58.8
				0.30 (0.4)	40	71 (52.5)	230 3PH	61.6

LFH Ordering Information

LF360 catalog numbers and ratings (continued)



ABB Catalog Number	Frame Size	Stack Height	Impeller Diameter m (ft.)	Motor Power kW (Hp)	Max Speed (RPM)	Torque nm (lb-ft)	Voltage (V/Phase)	Eff.(%)
				0.6 (0.8)	90	63 (46.7)	460 3PH	82.0
			6m (19.69ft)	0.5 (0.7)	81	62 (45.4)	230 3PH	82.9
		H60		0.6 (0.8)	75	76 (56)	460 3PH	78.8
	1 5360			0.6 (0.8)	75	76 (56)	230 3PH	80.6
			7m (22.97ft)	0.37 (0.5)	60	59 (43.8)	460 3PH	76.7
				0.37 (0.5)	60	59 (43.8)	230 3PH	79.4
				0.45 (0.6)	50	85 (63)	460 3PH	72.6
				0.45 (0.6)	50	85 (63)	230 3PH	74.8
		Н60-НР	6m (19.69ft)	0.6 (0.8)	90	63 (46.7)	460 3PH	83.0
				0.45 (0.6)	73	59 (43.2)	230 3PH	83.8
				0.6 (0.8)	75	76 (56)	460 3PH	80.6
	1 5360			0.6 (0.8)	70	81 (60)	230 3PH	82.0
	EI 500			0.37 (0.5)	60	59 (43.8)	460 3PH	78.5
			7m (22.97ft)	0.37 (0.5)	60	59 (43.8)	230 3PH	80.9
				0.5 (0.7)	50	100 (73.5)	460 3PH	72.9
				0.5 (0.7)	50	100 (73.5)	230 3PH	75.4

Values shown are of LFH working at +40°C (104°F) environment temperature. In these operating conditions the units reach their maximum performance before derating occurs. Units are "air over" during operation; performance and typical operating conditions are strongly influenced by the cooling action of the impeller.

Some torque deratings could be necessary in application, depending on the ability of the impeller to effectively cool the electronic driver and the electric motor. Maximum environment temperature expected in the application is to be carefully considered during tests, as it adds to the temperature of motor and driver influencing the maximum torque deliverable within acceptable temperature limits for motor and electronic driver.

LFH solution Technical Data

		Three phase	Single phase			
Product name	Number of phases	3	1			
	Nominal supply voltage	400 V rms	230 V rms			
	Line voltage (absolute min-max)	180 V rms 500 V rms	85 V rms 264 V rms			
	Line frequency range	50 Hz 60 Hz	50 Hz 60 Hz			
	Maximum line current	6 A rms	8 A rms			
	Power factor correction	Not available				
	Ground leakage current	< 3.5 mA @400 V rms	< 3.5 mA @ 230 V rms			
Driver output data	Number of phases	3	1			
	Maximum current	6 A peak	6 A peak			
	PWM pulse frequency	15 KHz	10 KHz			
Interface signal wire data	Wires number	6				
	Analog input voltage	0 10 Vdc				
	Analog output voltage	+10 Vdc (5 mA max current)				
	Input impedance	200 kOhm				
	Communication interface	EIA RS-485				
	Communication protocol	ModBus RTU				

- Unit housing: die-cast aluminum
- Installation position: shaft on bottom
- Direction frotation: configurable by Modbus (Default factory setup – clockwise, looking toward shaft)
- Max shaft axial load: 70 kg (154lbs)

- Shaft coupling through keyless locking device
- Balancing: rotor not balanced
- Bearings operation: maintenance-free
- Bearing seat material: die-cast aluminum
- Enclosure protection degree: IP65

LFH solution Dimensional drawing

— 01 LF220 — 02 LF360







-	Charle had a had		Dimensions (mm)								Weight		
Frame size Stack height	Stack neight	Α	в	B2	с	D	Е	F	G	н	I	J	kg (lbs)
1 5220	H30/H50	129.5	176.5	-	295	44	65	214	130	275	110	257	20 (44.1)
LF220	H70	149.5	197.5	-	315	44.5	65	214	130	275	110	257	26 (57.3)
	H20	123	-	112.5	311.7	76.2	-	-	264	420	-	386.8	35 (77.15)
1 5360	H40	143	-	112.5	311.7	76.2	-	-	264	420	-	386.8	45 (99.21)
LF300	H60	163	-	112.5	311.7	76.2	-	-	264	420	-	386.8	55 (121.25)
	Н60Н	163	-	112.5	311.7	76.2	-	-	264	420	-	386.8	55 (121.25)

Operating Modes







Modbus RPM speed control Input Type: 0

Analog 0-10 VDC speed control Input Type: 1

Modbus fixed speed control Input Type: 2



Modbus % speed control Input Type: 3



Analog 10-0 VDC speed control Input Type: 4

Туре	Description
0	Motor runs at value in register 66 (speed value cleared with power cycle)
1	Default setting = 1 Sets motor speed proportional to analog input voltage
2	Motor runs at value in register 17 (speed set point remains with power cycle)
3	Motor runs at % speed defined register 66 (value cleared on power cycle)
4	Motor speed inversely proportional to analog input voltage (available three phase only models)

- Operating mode can be modified by setting the input type (holding register number 30)
- Note: Input type 4 only available for three phase versions
- Default factory setting is input Type 1; Analog 0-10 VDC control.

ABB, your global value partner

Partnering with ABB gives you access to some of the world's most innovative technology and thinking.

Global reach

ABB operates in over 100 countries with its own manufacturing, logistics and sales operations together with a wide network of local channel partners that can quickly respond to your needs. They bring our products and services straight to your front door. ABB channel partners have in-depth knowledge of local markets and are conversant with the defined ABB products and processes.

Energy efficiency

ABB has what it takes to help every industry and application reach new levels of efficiency and energy savings even under the most demanding conditions. Combining the best available materials with superior technology, our motors are designed to operate reliably no matter how challenging the process or application, and to have low life cycle costs.









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