

QC1000 & QC2000 Series

- NEMA 1 & Chassis: 1 - 150 HP
- NEMA 4, 4X, or 12: 1 - 125 HP
- Constant Torque
- Rugged industrial design



QC1000 Series general purpose AC motor drives are designed for constant torque applications and are available in NEMA 1 and chassis models.



QC2000 Series general purpose AC motor drives are designed for constant torque applications and are available in NEMA 4, 4X (stainless steel), and 12 models for dusty, oily, and washdown environments.

Standard Features

- Input voltage ratings: 208, 230, 240, 380, 415, 460, 480, 575, 590 Vac (+10%, -15%) at 50 to 60 Hz.
- Full Protection: Ground Fault, Phase to Phase, Over Voltage, Under Voltage, Over Temperature, and Motor Over Current.
- 19 button tactile feedback keypad. Choice of scrolling or direct input of values for quick, easy setup.
- 32 character backlit display. Gives simultaneous indication of status, speed, load, direction, and speed reference type.
- Built in speed/frequency, load/amp, kilowatt hour, and elapsed time indicator. Speed indicator can be set to read Hz, RPM, % Speed, /S, /M, /H, #/S, #/M, #/H.
- Programmable automatic restart after fault or power outage. Speed search function to catch a spinning load.
- Three (3) selectable critical frequency avoidance ranges with adjustable skip bandwidth.
- Speed Follower Inputs: Speed pot, 4 to 20 mA (or 20 to 4 mA), 0 to 10 VDC (or 10 to 0 VDC).
- Keypad controls include: Start/Stop, Speed, Manual/Automatic, Jog, and Forward/Reverse.
- Analog output signals proportional to speed and load.
- RS232 serial communications (RS485 optional.)
- Two levels of password protection assures security.
- Electronic DC Injection Braking.
- Two Form "C" auxiliary relays and one open-collector output. Each programmable for: Run, Fault, Fault Lockout, At Speed, Above Set Speed, Current Limit, Follower Present, Maintenance Target, Auto Speed Mode, or Start Pending.
- Comprehensive Diagnostics: Logs ten previous faults in non-volatile memory. In addition to the description of the fault, the time and drive operating status, at the time of the fault, are given.
- Slip compensation for tighter speed regulation during load fluctuations. Automatic or manual boost for increased starting and accelerating torque.
- Adjustable jog speed and seven preset speeds. Each with individual accel and decel rates.
- 400 millisecond ride through keeps drive on line through short duration power dips (2 second extended ride through optional).
- QC1000 units have removable mounting feet for easy through panel mounting.

Operation

AC Tech's QC Series drives are extremely easy to operate. The 32 character LCD display gives complete drive status by simultaneously displaying:

- Drive Status: STOP, ACCEL, RUN, DECEL, FAULT.
- Commanded Speed: In units of Hz, RPM, %RPM, /S, /M, /H, #/M, and #/H.
- Load as a percentage or actual amps.
- Rotation Direction: Forward or Reverse.
- Speed Reference Source: Keypad, Speed Pot, mA, VDC, Presets Speeds.

The QC Series has a Monitor Mode which displays Time Since Start, Total Elapsed Run Time, and Total KWH. A programmable "Maintenance Target" alarm can alert the operator with a display message (or a contact closure) when to perform scheduled maintenance on the driven equipment. The alarm is set in hours of elapsed run time.

Programming

Programming is menu driven in plain English rather than in codes or symbols. Both the parameter name and the value are displayed simultaneously. Over eighty programmable parameters give the highest degree of flexibility available.

Parameter Summary

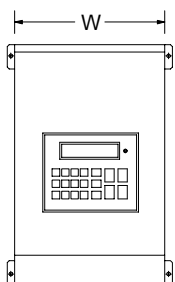
- Current Limit: 180 % for twenty seconds, 150 % for one minute.
- Thermal overload: "Inverse I²T" electronic motor overload protection (UL approved).
- Slip Compensation: 1% or better speed regulation.
- Speed follower signal calibration: Scales 4-20 mA or 0-10 VDC signal. Signal can be direct or reverse acting.
- Separate accel and decel: 0.1 to 3600.0 Seconds.
- 7 preset speeds with separate accels and decels.
- Jog speed with separate accel and decel.
- Three critical frequency avoidance ranges with common adjustable skip bandwidth.
- Analog output signals: Proportional to speed and load.
- Analog output signal calibration: Scales output signals for meters, master/slaves setups, or other functions.

- Minimum and maximum frequency adjustment: Up to 120 HZ (Optional Ranges to 650 Hz).
- Stop method: Coast or ramp to stop.
- Forward and/or reverse: Enable or lockout.
- Auto/Manual key: Enable or lockout.
- Restart "On the Fly" after power outage or fault: Catches a spinning load and resumes set speed.
- DC injection braking: Continuous or timed on start, on stop, @ zero speed, start & stop, or zero speed & stop, with programmable maximum load level.
- Speed display units and scaling.
- Load/Amps display selection and scaling.
- Base frequency: Determines V/Hz ratio.
- V/Hz curve type (Constant Torque or Variable Torque Patterns).
- Auto (accelerating) and manual (starting) boost.
- Programming of two Form "C" auxiliary relays and one open-collector output for: Run, Fault, Fault Lockout, At Speed, Above Set Speed, Current Limit, Follower Present, Maintenance Target, Auto Speed Mode, or Start Pending.
- Passwords: Two levels of protection with programmable passwords.
- Diagnostic log: Maintains a history of last ten faults in non-volatile memory.

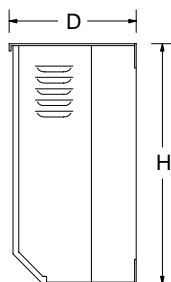
Standard Options

- Dynamic braking.
- Door interlocked disconnect switch.
- Input line fuses.
- Input line reactor (line reactors are standard on 240 and 480 Vac units at 25HP and above, and on 590 Vac units at 5 HP and above).
- Panel mount remote keypad.
- Manual or automatic bypass.
- 2 Second extended power loss ride through.
- Single phase input models.
- RS485 serial communications (Modbus® or Metasys® protocols).

QC1000 & QC2000 Ratings and Dimensions



Typical NEMA 1 Enclosure



Typical NEMA 4/12 Enclosure

HP	INPUT VOLTAGE	OUTPUT CURRENT	NEMA 1 MODEL	NEMA 1 DIMENSIONS			NEMA 4/12 MODEL ^{1,2}	NEMA 4/12 DIMENSIONS		
				H	W	D		H	W	D
1	240/200	4.0/4.8	Q12001B	12.00	7.44	5.91	Q22001C	13.00	7.88	6.19
	480/400	2.0/2.4	Q14001B	12.00	7.44	5.91	Q24001C	13.00	7.88	6.19
	590/480	1.6/2.0	Q15001B	12.00	7.44	5.91	Q25001C	13.00	7.88	6.19
2	240/200	6.8/8.1	Q12002B	12.00	7.44	7.91	Q22002C	13.00	7.88	7.25
	480/400	3.4/4.1	Q14002B	12.00	7.44	7.91	Q24002C	13.00	7.88	6.19
	590/480	2.7/3.4	Q15002B	12.00	7.44	7.91	Q25002C	13.00	7.88	6.19
3	240/200	9.6/11.5	Q12003B	12.00	7.44	7.91	Q22003C	13.00	7.88	7.25
	480/400	4.8/5.7	Q14003B	12.00	7.44	7.91	Q24003C	13.00	7.88	7.25
	590/480	3.9/4.8	Q15003B	12.00	7.44	7.91	Q25003C	13.00	7.88	7.25
5	240/200	15.2/18.0	Q12005B	12.00	7.44	7.91	Q22005C	16.00	9.70	7.50
	480/400	7.6/9.0	Q14005B	12.00	7.44	7.91	Q24005C	16.00	9.70	7.50
	590/480	6.1/7.6	Q15005B	15.50	7.44	7.91	Q25005C	16.00	9.70	7.50
7.5	240/200	22/26	Q12008B	14.00	8.88	9.50	Q22008C	19.00	11.38	8.83
	480/400	11.0/13.0	Q14008B	12.00	7.44	7.91	Q24008C	16.00	9.70	7.50
	590/480	9.0/11.0	Q15008B	15.50	7.44	7.91	Q25008C	16.00	9.70	7.50
10	240/200	28/33	Q12010B	14.00	8.88	9.50	Q22010C	19.00	11.38	8.83
	480/400	14.0/17.0	Q14010B	14.00	8.88	9.50	Q24010C	19.00	11.38	8.83
	590/480	11.0/14.0	Q15010B	19.00	8.88	9.84	Q25010C	19.00	11.38	8.83
15	240/200	42/49	Q12015B	14.00	8.88	9.50	Q22015C	19.00	11.38	8.83
	480/400	21/25	Q14015B	14.00	8.88	9.50	Q24015C	19.00	11.38	8.83
	590/480	17/21	Q15015B	19.00	8.88	9.84	Q25015C	19.00	11.38	8.83
20	240/200	54/64	Q12020B	19.00	8.88	9.84	Q22020C	29.00	11.74	9.78
	480/400	27/32	Q14020B	19.00	8.88	9.84	Q24020C	29.00	11.74	9.78
	590/480	22/27	Q15020B	25.00	8.88	10.50	Q25020C	29.00	11.74	9.78
25	240/200	68/82	Q12025B	25.00	8.88	10.50	Q22025C	29.00	11.74	10.98
	480/400	34/40	Q14025B	25.00	8.88	10.50	Q24025C	29.00	11.74	9.78
	590/480	27/34	Q15025B	25.00	8.88	10.50	Q25025C	29.00	11.74	9.78
30	240/200	80/96	Q12030B	25.00	8.88	10.50	Q22030D	31.00	14.00	11.86
	480/400	40/48	Q14030B	25.00	8.88	10.50	Q24030C	29.00	11.74	10.98
	590/480	32/40	Q15030B	25.00	8.88	10.50	Q25030C	29.00	11.74	10.98
40	240/200	104/125	Q12040B	25.00	13.00	10.50	Q22040D	31.00	14.00	11.86
	480/400	52/63	Q14040B	25.00	13.00	10.50	Q24040D	31.00	14.00	11.86
	590/480	41/50	Q15040B	25.00	13.00	10.50	Q25040D	31.00	14.00	11.86
50	480/400	65/78	Q14050B	25.00	13.00	10.50	Q24050D	31.00	14.00	11.86
	590/480	52/64	Q15050B	25.00	13.00	10.50	Q25050D	31.00	14.00	11.86
60	240/200	154/185	Q12060B	29.00	16.64	11.85	Q22060D	37.00	18.00	13.30
	480/400	77/93	Q14060B	29.00	16.64	11.85	Q24060D	37.00	18.00	13.30
	590/480	62/77	Q15060B	29.00	16.64	11.85	Q25060D	37.00	18.00	13.30
75	480/400	96/115	Q14075B	29.00	16.64	11.85	Q24075D	37.00	18.00	13.30
	590/480	77/95	Q15075B	29.00	16.64	11.85	Q25075D	37.00	18.00	13.30
100	480/400	124/149	Q14100B	29.00	24.42	11.85	Q24100D	39.00	26.00	13.30
	590/480	99/122	Q15100B	29.00	24.42	11.85	Q25100D	39.00	26.00	13.30
125	480/400	156/188	Q14125B	29.00	24.42	11.85	Q24125D	39.00	26.00	13.30
	590/480	125/154	Q15125B	29.00	24.42	11.85	Q25125D	39.00	26.00	13.30
150	480/400	180/216	Q14150B	29.00	36.66	11.85				
	590/480	144/177	Q15150B	29.00	36.66	11.85				

¹ Models ending in "C" are available in NEMA 4X (stainless steel) enclosures, designated by "E" instead of "C". Dimensions are identical.

² Models ending in "D" are NEMA 12 enclosed (dust-tight and drip-proof, but not washdown).

QC1000 & QC2000 Environmental and Electrical Specifications

Storage Temperature	-20 to 70 C
Ambient Operating Temperature	0 to 50 C (QC1000) 0 to 40 C (QC2000)
Ambient Humidity	Less than 95% (non-condensing)
Altitude	3300 ft (1000 m) above sea level without derating
Input Line Voltages	240/200 Vac, 480/400 Vac, 590/480 Vac
Input Voltage Tolerance	+10%, -15%
Input Frequency Tolerance	48 to 62 Hz
Output Wave Form	Sine Coded PWM (Pulse Width Modulated)
Output Frequency	0 - 120 Hz (optional ranges to 650 Hz)
Carrier Frequency ¹	1.5 kHz, 8 kHz, 10 kHz, 12 kHz
Service Factor	1.00
Efficiency	97% or better
Power Factor (displacement)	0.96 or better
Overload Current Capacity	150% for 60 seconds, 180% for 20 seconds
Speed Reference Follower	0-5 VDC, 0-10 VDC, 4-20 mA
Analog Outputs ²	
Proportional to Frequency	0-10 VDC, 2-10 VDC, 4-20 mA, 12 VDC Pulse Train
Proportional to Load	0-10 VDC, 2-10 VDC, 4-20 mA
Digital Outputs (Programmable)	(2) Form C relays: 2 amps at 120 Vac or 28 VDC (1) Open-collector output: 40 mA at 30 VDC

¹ Maximum carrier frequency on 590/480 Vac models rated 125 HP and 150 HP is 1.5 kHz.

² There is one 4-20 mA signal that can be selected to indicate frequency or load.

AC Tech, committed to AC Drives!

AC Technology Corporation is dedicated to producing the finest AC Variable Frequency Drives available. At AC Tech, drives are our business, our only business. This focus has brought success that is reflected in our growth that has far outpaced the average growth of the industry. AC Tech's continual innovation and a flexibility cannot be found in companies that divide their attention and resources among many diverse product lines.

AC Tech pioneered many developments in AC variable frequency drives such as 575 Vac models (AC Tech is the largest supplier of 575 Vac drives to Canada), stainless steel (NEMA 4X) enclosed drives, plain English programming utilizing LCD technology, and the use of Intelligent Power Modules (IPM). AC Tech's commitment to quality, innovation and value is a personal one, shared by all employees.