3 Data

3.1 Models and ratings

Model	AC supply		Motor power		100% RMS AC input current *	AC input power †	100% RMS output current	150% overload current for 60 secs	Inrush current ‡
	V (±10%)	ϕ	kW	HP	A	kVA	A	A	A
DIN1220075B	200 ~ 240	1	0.75	1.0	11.3	2.6	4.3	6.5	270
DIN1220150B	200 ~ 240	1	1.5	2.0	18.5	4.2	7.0	10.5	270
DIN1220220B	200 ~ 240	1	2.2	3.0	26.0	6.0	10.0	15.0	270
DIN3220075B	200 ~ 240	3	0.75	1.0	6.9	2.4	4.3	6.5	270
DIN3220150B	200 ~ 240	3	1.5	2.0	11.3	3.9	7.0	10.5	270
DIN3220220B	200 ~ 240	3	2.2	3.0	15.4	5.3	10.0	15.0	270
DIN3380075B	380 ~ 480	3	0.75	1.0	4.2	2.8	2.1	3.2	250
DIN3380110B	380 ~ 480	3	1.1	1.5	5.0	3.3	2.8	4.2	250
DIN3380150B	380 ~ 480	3	1.5	2.0	5.8	3.8	3.8	5.7	250
DIN3380220B	380 ~ 480	3	2.2	3.0	9.0	5.9	5.6	8.4	250
DIN3380300B	380 ~ 480	3	3.0	4.0	11.6	7.6	7.6	11.4	250
DIN3380400B	380 ~ 480	3	4.0	5.3	13.9	9.2	9.5	14.3	250

Notes

*** AC supply impedance**

Source impedance: 0.014Ω
(supply having 16000 Amp short-circuit capability)

† AC supply kVA calculation

Single-phase models (200V to 240V):
[100% RMS supply current] x 230V

Three-phase models (200V to 240V):
[100% RMS supply current] x √3 x 230V

Three-phase models (380V to 480V):
[100% RMS supply current] x √3 x 400V

‡ Inrush current

Maximum amplitude

Inrush currents were measured at the peak of the first AC supply half-cycle that was applied to a Drive having fully discharged DC-bus capacitors. The following conditions applied:

Internal temperature of the Drive:
50°C (122°F) (typical)

AC supply voltage as shown opposite

Models	AC supply voltage
200 ~ 240V single-phase and three-phase	250VRMS
380 ~ 480V three-phase	440VRMS

Typical duration

Duration of inrush current: 1 ~ 2 ms

Temperature effects

When the power circuits of the Drive are cold, inrush currents are lower than the specified values (ie. the inrush current at the first start-up after a long period of non-use will be lower than at subsequent start-ups when the Drive has become warmer).

3.2 AC supply frequency

All models: 48 ~ 62 Hz

3.3 Maximum supply imbalance

2% negative phase sequence (equivalent to 3% voltage imbalance between phases)

3.4 Altitude

Reduce the normal full-load current by 1% for each 100m above 1000m above sea-level.

Maximum altitude: 4000m above sea level

3.5 Ambient temperature and humidity

Ambient temperature range:

−10°C to 50°C (14°F to 122°F) non-condensing

Storage temperature range:

−40°C to +50°C (-40°F to 122F) non-condensing

12 months maximum

3.6 Environmental protection

Ingress Protection rating: IP20

The Drive is to be mounted in an enclosure which provides protection from the environment, and prevents access by unskilled personnel.

3.7 Materials

Flammability rating of all plastics used: UL94 V0

3.8 Vibration and shock

Random vibration tests: In accordance with BS2011, part 2.1, test Fd (IEC 68-2-34)

Frequency Bandwidth: 5 to 150Hz

Acceleration spectral density: $0.01g^2$ / Hz

Test duration: 1 hour per axis

Tested in the three mutually perpendicular axes

Shock tests: In accordance with BS2011, part 2.1, test Ea (IEC 68-2-27)

Pulse shape: Half sinewave

Pulse duration: 11ms

Peak acceleration: 50g

Test duration: Three shocks in each direction of each axis (total 18)

Tested in the three mutual perpendicular axes

3.9 Electromagnetic compatibility (EMC)

The following is a summary of the EMC performance of the Drive. For full details, refer to the *Dinverter B EMC Data Sheet* which can be obtained from a Drive Centre or distributor listed at the end of this User Guide.

Standard	Part	Type	Level or conditions
EN50082–2		Generic standard for the industrial environment	
IEC1800–3 EN61800–3		Product standard for adjustable-speed power drive systems	First and second environments
IEC1000–4 EN61000–4	2	Electrostatic discharge	Level 3
	3	Radio frequency field	Level 3
	4	Fast transient burst	Level 4 at the control terminals Level 3 at the power terminals
	5	Surge	Level 4 line-to-ground Level 3 line-to-line
	6	Conducted radio frequency	Level 3
	11	Supply voltage dips and interruptions	All cases *

* The Drive may stop when energy stored in the Drive is depleted, but will behave as programmed when the power returns.

Immunity

Compliance with immunity standards does not depend on installation details. The Drive meets the standards shown in the table above.

Emission

The Drive complies with the requirements of IEC1800–3 and EN61800–3 for emission in the second environment subject to the special provisions given in that standard.

Compliance with more severe emission standards depends on rigorous adherence to the installation guidelines, including the use of the specified RFI filter in the AC supply circuit. Compliance also depends on the PWM switching frequency used in the output stage of the Drive, and the length of the motor cable. For full details, refer to the *Dinverter B EMC Data Sheet* which can be obtained from a Drive Centre or distributor listed at the end of this User Guide.

In summary...

When an RFI filter is used, conducted and radiated emissions meet EN50081–2 (generic emission standard for the industrial environment) and IEC1800–3 / EN61800–3 (first environment, restricted distribution) over a wide range of conditions. This is similar to CISPR11 and EN55011 Class A.

Under restricted conditions, the conducted emission meets EN50081–1 (generic emission standard for the residential, commercial and light industrial environment). This is similar to CISPR11 and EN55011 Class B.

3.10 Frequency accuracy

±0.01% full-scale
(crystal control of frequency)

3.11 Resolution

Digital frequency control

0.001 Hz when using serial communications

Parameter values

The resolution of parameter values is affected by the value, as follows:

Values	Resolution
0 to 100	0.1
>100	1

The resolution of the acceleration and deceleration settings becomes more coarse towards 600 and 999 seconds.

For the following parameters...

p0, **p1**, **p7**, **p10** to **p15**, **p20** to **p27**

...the resolution is as follows:

0.3 Hz when Upper Limit Frequency (ULF) = 480 Hz
0.5 Hz when Upper Limit Frequency (ULF) = 960 Hz

For parameter **p6**, the resolution is 0.4 Hz.

3.12 Starts per hour

Drive

By interrupting the AC supply

20 starts per hour maximum (3 minutes interval between starts.

Maximum stabilizing time after connecting the AC supply

3 seconds (wait at least 3 seconds before monitoring the state of the status-relay contacts, etc.).

Electronic control using the DRIVE ENABLE input

Unlimited.

Motor

Refer to the motor manufacturer.

3.13 Heat dissipation and cooling

Model	Power dissipation in Watts at specified switching frequency				Fan air flow
	2.9 kHz	5.9 kHz	8.8 kHz	11.7 kHz	m^3/min
DIN1220075B	64	70	88	90	None
DIN1220150B	67	73	93	114	0.72
DIN1220220B	82	115	131	140	0.72
DIN3220075B	52	61	67	71	None
DIN3220150B	62	72	80	85	0.72
DIN3220220B	81	93	108	124	0.72
DIN3380075B	41	44	49	61	None
DIN3380110B	46	57	65	72	None
DIN3380150B	55	67	73	89	0.72
DIN3380220B	75	89	97	119	0.72
DIN3380300B	90	105	120	138	0.72
DIN3380400B	110	120	135	148	0.72

The dissipation was measured as follows:

Single-phase models (200V to 240V)
240V AC supply voltage
41Hz output frequency (worst case)
100% output current

Three-phase models (200V to 240V)
225V AC supply voltage
41Hz output frequency (worst case)
100% output current

Three-phase models (380V to 480V)
440V AC supply voltage
41Hz output frequency (worst case)
100% output current

3.14 PWM switching frequencies

The following PWM switching frequencies and Upper Limit Frequencies (ULF) can be selected:

Upper Limit Frequency	Minimum PWM frequency
120Hz	2.9kHz
240Hz	2.9kHz
480Hz	5.9kHz
960Hz	11.7kHz

The table shows the maximum ULF that can be used for each PWM switching frequency.

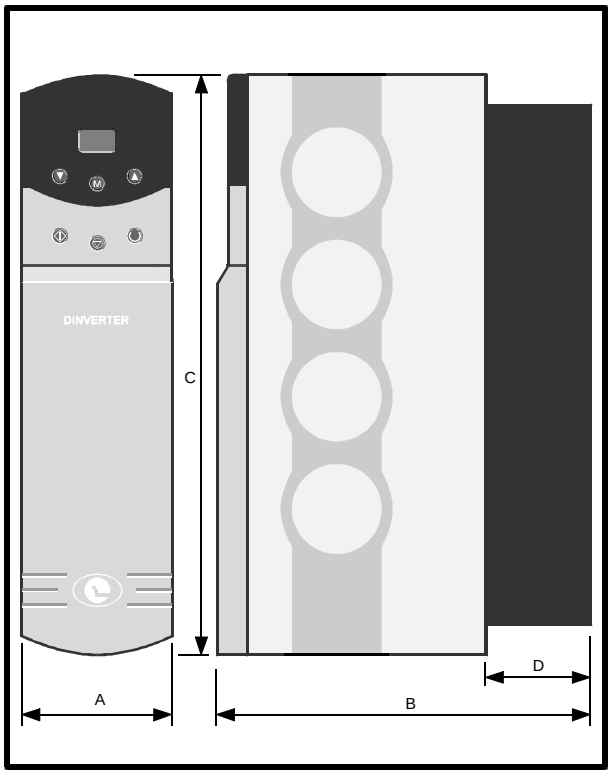
3.15 Serial communications

Four-wire RS422 or RS485
Protocol: ANSI × 3.28–2.5–A4
Baud rate: 4800 or 9600
See Chapter 12 Serial Communications.

3.16 Weights

Model	Weight	
	kg	lb
DIN1220075B	3.1	7
DIN1220150B	3.3	$7^{1}/_{2}$
DIN1220220B	3.4	$7^{3}/_{4}$
DIN3220075B	3.1	7
DIN3220150B	3.3	$7^{1}/_{2}$
DIN3220220B	3.4	$7^{3}/_{4}$
DIN3380075B	3.1	7
DIN3380110B	3.1	7
DIN3380150B	3.1	7
DIN3380220B	3.1	7
DIN3380300B	3.4	$7^{3}/_{4}$
DIN3380400B	3.4	$7^{3}/_{4}$

3.17 Overall dimensions



Dimension	mm	in
A	91	$3^{9}/_{16}$
B	200	$7^{7}/_{8}$
C	293	$11^{1}/_{2}$
D	56	$2\ ^{1}/_{8}$

Figure 3–1 Overall dimensions of the Drive