MODEL SPECIFICATIONS AND FEATURES

Overloadability	1.5 x In, 1min/10min; 2.0 x In, 2s/20s
Max. output voltage	Equal to supply voltage
Supply	
Supply voltage	460-series 380-500VAC, 575-series 525-690VAC
Allowable voltage fluctuation	+/- 10%
Nominal supply frequency	50/60Hz +/- 5%
Signal Input Levels	
Digital controls	S1, S2, DIA3, DIA4, DIA5, DID1, DID2, DID3, DID4, DID5: 42 … 240VAC; 15mA
Analog references	AIN1: 0 … +10V and AIN2: -10 … +10V; 200kΩ load; accuracy 0.5%
Encoder feedback	EA+/- and EB+/-; 0/24V; 3kΩ load; floating differential inputs
Control features	
Control method	Open loop or closed loop vector control
Frequency control range	0 ... 250Hz
Frequency command	Potentiometer, motor potentiometer, 2-4-step controller or 0 ... 10V analog signal
Limit switch functions	Slowdown and stop limit inputs for both directions
Speed control range	Open loop vector control
	s_N ... 100% (s_N= motor nominal slip)
	Closed loop vector control
	0 ... 100%
Speed accuracy	Open loop vector control
	1% of nominal speed at speed range 10 ... 100%
	1/3 of motor nominal slip at speed below 10%
	Closed loop vector control
	0.01% of nominal speed
Extended speed range	100 ... 200% programmable
Braking torque	150%
Protections	
Stall prevention	During acceleration and constant speed
Motor overload protection	Thermistor/Klixon based temperature measurement
Overload protection	Fault is detected if the current momentarily exceeds 280% of RMS rated current
Undervoltage / blown fuse	Fault is detected if DC voltage drops below 333V (460-series), 460V (575-series)
Overvoltage protection	Fault is detected if DC voltage exceeds 911V (460-series), 1200V (575-series)
Momentary power loss	Immediate fault stop
Inverter overtemperature	Temperature sensor on the heat sink
Mechanical brake	Brake contactor control relay
Braking transistor	Electronic supervision for the braking chopper and for the braking resistor
Brake slip protection	Only in closed loop and if protection function enabled, also a programmable relay output
Ground fault	Provided by electronic circuitry
Overspeed, stall, speed difference supervision	Independent measurement using SSU board and a pulse wheel or encoder
Ambient conditions	
Ambient temperature	-10°C ... +55°C (14°F ... 131°F) for ED≤60%
Storage temperature	-40°C ... +60°C (-31°F ... 140°F) dry. Power on >1h per year.
Humidity	<95%RH (no condensation)
Altitude	Maximum 1000m at In. Above 1000m: In reduces 1% per each 100m.
	Above 3000m: consult factory.
Vibration	Operation: maximum displacement amplitude 1mm at 3-15.8Hz.
	Maximum acceleration amplitude 1G (9.81m/s²) at 15.8-150Hz
	Conforms to LV and EMC directives (optional).

Power Class (460-series)	4004	4005	4009	4012	4016	4022	4031	4038	4045	4061	4072	4087	4105	4140	4168	4210	4245	4300	4385	4460	4590	4650
Frame Size	Fr4	Fr4	Fr4	Fr4	Fr5	Fr5	Fr6	Fr6	Fr6	Fr7	Fr7	Fr7	Fr8	Fr8	Fr8	Fr9	Fr9	Fr10	Fr10	Fr10	Fr11	Fr11
Horsepower (Hp) at 460V	2	3	5	7.5	10	15	20	25	30	40	50	60	75	100	125	150	200	250	300	350	500	550
Output Current In (A)	4.5	5.6	9	12	16	22	31	38	45	61	72	87	105	140	168	210	245	300	385	460	590	650
Max. Current 1min (A)	10	10	15	20	27	36	48	63	72	90	113	135	165	225	270	315	368	450	578	690	885	975
Max. Current 2s/20s (A)	11	11	18	24	32	46	62	76	92	122	144	174	210	280	336	349	444	545	697	832	1068	1177

Power Class (575 series)	5005	5007	5010	5013	5018	5022	5027	5034	5041	5052	5062	5080	5100	5125	5144	5170
Frame Size	Fr6	Fr6	Fr6	Fr6	Fr6	Fr6	Fr6	Fr7	Fr7	Fr8	Fr8	Fr8	Fr9	Fr9	Fr9	Fr9
Horsepower (Hp) at 575V	3	5	7.5	10	15	20	25	30	40	50	60	75	100	125	150	175
Output Current In (A)	5.5	7.5	10	13.5	18	22	27	34	41	52	62	80	100	125	144	170
Max Current 1min (A)	9	12	15	21	27	33	41	51	62	78	93	120	150	188	216	255
Max. Current 2s/20s (A)	11	15	20	27	36	44	54	68	82	104	124	160	200	213	245	289

WORLDWIDE EXPERIENCE...LOCAL SUPPORT & SERVICE

For over a decade, Drivecon has been a supplier of drive systems to crane manufacturers for a wide range of applications including aerospace, automotive, power generation, steel, paper and many other industries.

Drivecon has the products, knowledge, experience and technology to design, fabricate and support all your controls and electrification needs. Our products range from standard and custom Variable Frequency Drive (VFD) panels, motors, radio controls, pendant stations and quick connect festoon systems to complete turnkey modernization projects. Furthermore, we provide 24/7 technical support as well as VFD repairs.

In addition, Drivecon goes beyond its local capabilities; our global network of world class suppliers, partners and affiliates are specialists in controls and electrification for the overhead materials handling industry.

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Bulletin# XT/08

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EXCLUSIVE FEATURES

- Designed for crane specific applications
- Exclusive crane specific software
- Slim and robust chassis design
- Continuous run-time self-supervision
- Speed Supervision Unit™ (SSU), a multi-function integral PCB monitoring safety and performance
- Brake slip monitoring with autodrive activation and alarm warning
- Integrated line reactor for maximum protection and reliability
- Integrated Dynamic Braking Transistor
- Vector control capabilities in open and closed loop modes
- Expandable I/O capabilities
- Common processor cards between all sizes
- Removable display with parameter storage capabilities
- Many operational features such as slack rope, over load, over voltage and Extended Speed Range (ESR)
- Active faults and history fault tracking in simple language
- Simple programming
- PC connectivity via NC-Drive™ software (RS232C terminal)
- Incorporated Anti-Sway software control
- Multi-hoist interlocking
- Field bus communication
- UL Listed/UL508 Certified Facility

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AC Variable Frequency Drives
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Variable Frequency Drive Accessories

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THE ULTIMATE AC DRIVES FOR OVERHEAD CRANES

Drivecon®
MOTOR DRIVES AND CONTROLS

A COMPLETE FREQUENCY CONTROL SYSTEM DESIGNED SPECIFICALLY FOR CRANES

XT Series crane inverter hardware and software are designed and manufactured to Drivecon crane application specifications. This inverter design is based on years of crane experience and thousands of engineering hours.

XT Series provides stepped or stepless (infinitely variable) speed control of cranes and hoists for precise load positioning and reduced load swing. This inverter-based motor control system controls speed by varying the voltage and frequency of a squirrel cage motor. By replacing a fixed 60 Hz frequency with a variable frequency, the XT Series allows the operator to easily increase or decrease motor speed. This controlled acceleration and deceleration provdes for smooth starts and stops, reducing gear and motor wear and structural stresses on components leading to optimized crane life.

MODULAR DESIGN OF CONTROL & POWER UNITS

Power and control circuits are in separate units, and are connected via a multi-pole connector.

Power Unit
The power unit is available in 380...500V, and 525...690V, three-phase AC input voltage ranges. The unit incorporates all power circuit components necessary for the operation of the inverter, and is connected to the control unit via a multi-pole connector. All inverters are equipped with a built-in dynamic brake chopper as standard and a three phase input line filter. External brake resistor is designed to meet the application.

Control Unit
Along with an enhanced micro-processor and ASIC circuitry, the control unit incorporates a LCD interface for setting parameters and controlling the functions of the drive. The display also provides information of the actual values of current, power and voltage. The display can be mounted directly on the enclosure door, if necessary. The control unit provides five slots for various I/O cards. A wide selection of cards is available, ranging from cards with simple analog and digital inputs to sophisticated profibus cards. The internal bus of the control unit is capable of handling several profibus connections simultaneously. The control unit is typically powered from the power unit. If necessary, it can also be powered from an external 24V supply, maintaining access to the stored data and other parameters (for example, in profibus applications) even if the main supply is disconnected.

PRECISE SPEED & TORQUE CONTROL FOR ALL CRANE APPLICATIONS

Central to this inverter design is a highly developed Application Specific Integrated Circuit (ASIC), an adaptive motor model and vector control algorithms for both closed loop flux vector with encoder with feedback and open loop flux vector control. This provides outstanding performance with complete speed and torque control for all crane and hoisting motions.

XTd Vector Series: **Open Loop** vector hoist traverse control and hoisting with load brake. 30:1 speed range, available from 2-1000HP.

XTc Vector Series: **Closed Loop** vector control for engineered hoists, **Open Loop** vector hoist control (with speed feedback), or Closed Loop vector traverse control for high performance engineered cranes. Up to **1000:1** speed range. Available from 2-1000HP.

XT Series uses a built-in motor model which calculates, 1000 times per second, the property voltage and frequency for the requested operating condition. The closed loop vector control also uses encoder feedback along with a built-in motor model. This encoder feedback enhances motor control accuracy.

SAFETY FEATURES

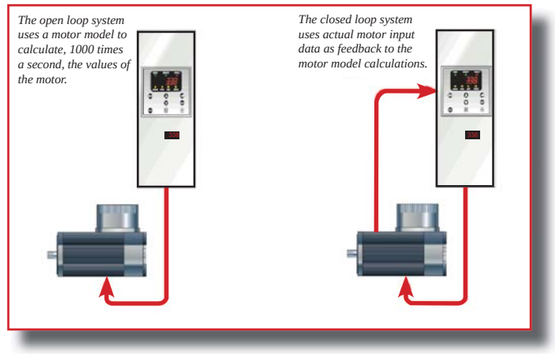
In closed loop hoisting applications (without a load brake), XT's exclusive Speed Supervision Unit (SSU) monitors overspeed, stall, speed deviation, and brake slip (when activated) stopping motion immediately if any of these conditions are detected. This exclusive feature will continue to monitor the above conditions as long as power is supplied to the unit.

CONTROL

Stepless (infinitely variable) speed control ensures easy, safe, and precise load handling. Very low minimum speed improves positioning accuracy (especially for less experienced operators), reducing the possibility of load and machinery damage. Extended crane life and minimized downtime.

RELIABILITY

A standard built-in input filter protects against electrical noise spikes that can cause inverter damage and shutdowns during operation. This same filter also helps remove the noise created by the drive, the end result of which increases the power quality by reducing the total harmonic distortion.



EASE OF OPERATION

XT Series Crane Control Systems are ready to connect and use. Inverter performance characteristics are pre-programmed and tested at the factory. This ensures fast start-up and accurate operation for both new and retrofit installations. Should the crane operating requirements change, a few simple parameter adjustments are all that is required.

DRIVE SOFTWARE

XT Series includes a user-friendly digital display panel for programming and monitoring. The panel includes a keyboard and LCD display. These panels are removable and interchangeable for use on all XT Series vector inverter controls. Panels can also be remotely mounted or removed to ensure that control parameters are not changed. PC connection is easy through the RS terminal for using the NC Drive software. (Available free of charge on our website at www.drivecon.com or by contacting our technical support department at 847-855-9150.)