



CAROTRON

i n t r o d u c e s

High Speed Digital Signal Processor
Four-Line LCD Display
EE Prom Memory
User Friendly Programming
Two Level Password
MODBUS RTU Communications



DIGITAL

STANDARD FEATURES



- Both Regenerative and Non-Regenerative models are available
- Standard models programmable for 230, 380, or 460VAC Input
- Speed Reference: 0-10VDC, 0-±10VDC, 0-20mA, 4-20mA, Frequency Follower or Up/Down Push Buttons
- 4 Preset Speeds and 1 Jog Speed
- 2 Accel and 2 Decel Adjustment Selections
- Feedback: Armature, DC Tachometer, AC Tachometer or Encoder Selectable
- Tachometer Loss Protection
- Electronic Motor Overload Protection
- Dated Fault Log History (stores the last five)
- Multi-function Inputs: 7 Digital, 1 Frequency and 5 Analog
- Multi-function Outputs: 1 Digital/Frequency, 3 Relay and 2 Analog
- Built in Field Regulator for seamless extended speed

DIGITAL OPERATOR

The Elite[®]Pro has been equipped with an enhanced operator panel as a standard. The operator panel displays text messages on a 20 character x 4 line backlit LCD display. Text messages can often eliminate the need to look up parameter codes in the instruction manual. Five soft keys are used to maneuver around in the simple menu structure of the Elite[®]Pro. Additionally, the operator panel stays mounted on the drive's control board even when the front cover is removed. The operator panel can also be remote mounted up to 1000 feet away with an optional NEMA 4 mounting kit and simple communication cable.

MULTIPLE PROCESSORS

The Carotron Elite[®]Pro has been designed with control loop speed and accuracy in mind. As a result, our control is equipped with 1 digital signal processor (DSP) and 5 microprocessors. The DSP is responsible for the Current Control Loop, Velocity Control Loop and I/O Functions. Three of the microprocessors are used to generate the firing signals to the SCRs. The other 2 microprocessors handle the Keypad and Communication functions. The final payoff is a DC Drive with superior speed and torque regulation, as compared with most drives

ON BOARD EE PROM

One of the great advantages of the Elite[®]Pro is the on board EE PROM. EE PROM is a user modifiable read only memory that can be erased and reprogrammed. Since the program code is stored here, field upgrades are made easy. In other words, software upgrades or application specific changes can be made without sending the unit back to the factory.

COMMUNICATIONS

Many Users and OEM's have already recognized the benefits of serial communications with motor controllers. The lower cost of engineering and installation combined with enhanced flexibility make this an attractive low cost alternative to control wiring. Many products offer serial communications only as an option. The Elite[®]Pro comes with RS-232/RS-485/Modbus capability right out of the box.

SHUNT FIELD REGULATOR

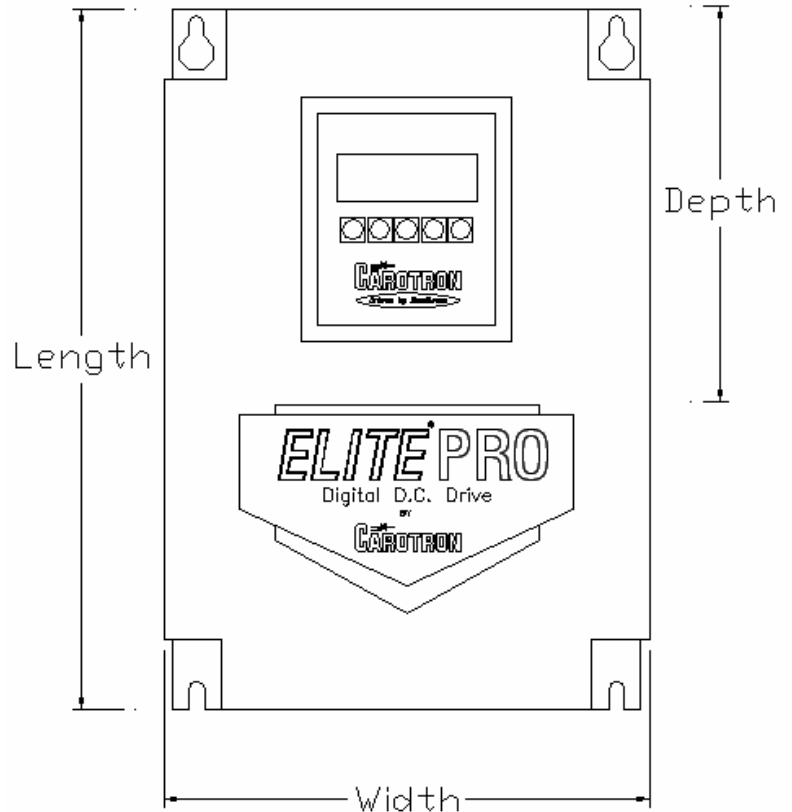
The on board Field Regulator has two modes of operation. In the standard mode, the regulator supplies the standard 150/247/300VDC depending on the input voltage supply. In the closed loop mode, the shunt field current is regulated thus providing improved performance throughout the motor's temperature range. This mode of operation along with the regulators ability to be used with an external voltage source makes it easy for the Elite[®]Pro to be used with motors that have non-standard field voltages.

OTHER FEATURES

Free – included

- PRO-Link computer software for upload / download and file storage as well as PROfessors for assistance in set-up for specified operating modes
- Field Cross-over control for constant HP above base speed
- Add on kits for NEMA 1 Enclosure with fuses, armature contactor and AC disconnect
- Software options for PID Dancer Controls, Constant Tension Center Winder Control, Load Cell Tension Control, Center Let-off Control, PI control, Sonic Measurement, Motor operated Pot (MOP) and other application specific functions

DIMENSIONS



Model	Length	Width	Depth
EPx020-000 thru EPx060-000	15.00	10.40	8.50
EPx075-000 thru EPx150-000	22.00	10.75	10.68
EPx200-000 thru EPx400-000	27.60	10.45	13.75
EPx500-000 thru EPx600-000	32.70	15.46	17.07

MODEL RATINGS

Non-Regen Models	Regen Models	HP @ 240VDC	HP @ 500VDC	Continuous Amps	Peak Amps
EPN020-000	EPR020-000	10	20	36	54
EPN040-000	EPR040-000	20	40	71	107
EPN060-000	EPR060-000	30	60	107	161
EPN075-000	EPR075-000	40	75	140	210
EPN100-000	EPR100-000	50	100	174	261
EPN120-000	EPR120-000	60	125	206	309
EPN150-000	EPR150-000	75	150	256	384
EPN200-000	EPR200-000	100	200	340	510
EPN250-000	EPR250-000	125	250	425	638
EPN300-000	EPR300-000	150	300	510	765
EPN400-000	EPR400-000	200	400	688	1020
EPN500-000	EPR500-000	250	500	850	1275
EPN600-000	EPR600-000	300	600	1020	1500

SPECIFICATIONS

Input Voltage	230, 380 or 460VAC $\pm 10\%$, 3 phase, 50/60Hz ± 2 Hz
Armature Output	0-240VDC @230VAC 0-415VDC @380VAC 0-500VDC @460VAC
Field Output	Voltage 0-200VDC @230VAC 0-400VDC @460VAC Current EPx020-000 thru EPx060-000: 8A max EPx075-000 thru EPx150-000: 10A max EPx200-000 thru EPx600-000: 12A max
Speed Reference	0-10VDC 0- ± 10 VDC 0-20mA Frequency Up/Down Push Buttons
Speed Feedback	Encoder: 1024/2048PPR (Max 200KHz) Tachometer: up to 100VDC/1000RPM (200VDC max input)
Speed Regulation	Armature Feedback: $\pm 1\%$ Encoder Feedback: $\pm 0.01\%$ Tachometer Feedback: $\pm 0.01\%$
Torque Regulation	$\pm 1\%$ of Range Selected
7 Digital Inputs	Sourcing: $V_{il} = 5.0$ VDC max, $V_{ih} = 8.0$ VDC min. to 30 VDC 4.7K OHM input impedance (sinking logic can also be used)
5 Analog Inputs (12 bit Resolution)	Inputs 1-4 are configurable as Voltage or mA 0- ± 10 VDC with 1M OHM input impedance 0-20mA with 270 OHM input impedance Input 5, Voltage only 0- ± 10 VDC with 20k Ω input impedance
1 Frequency Input	0-40KHz Square Wave
3 Relay Outputs	115VAC or 60VDC @ 2Amps
2 Analog Outputs	0- ± 10 VDC, 20mA max, 12bit Resolution
1 Digital/Frequency Outputs	2000Hz max, Open Collector, 20mA max
Temperature Range:	Chassis: 0 to 55°C Enclosed: 0 to 40°C

Carotron, Inc. is proud to introduce the Elite[®]Pro, the latest addition to the Carotron Family of high performance, reliable, and rugged DC motor controls. Many years of research and development by Carotron's Engineering Staff have culminated in a drive series that provides quality, accuracy, flexibility and user friendliness not found in any other drive in the market place.

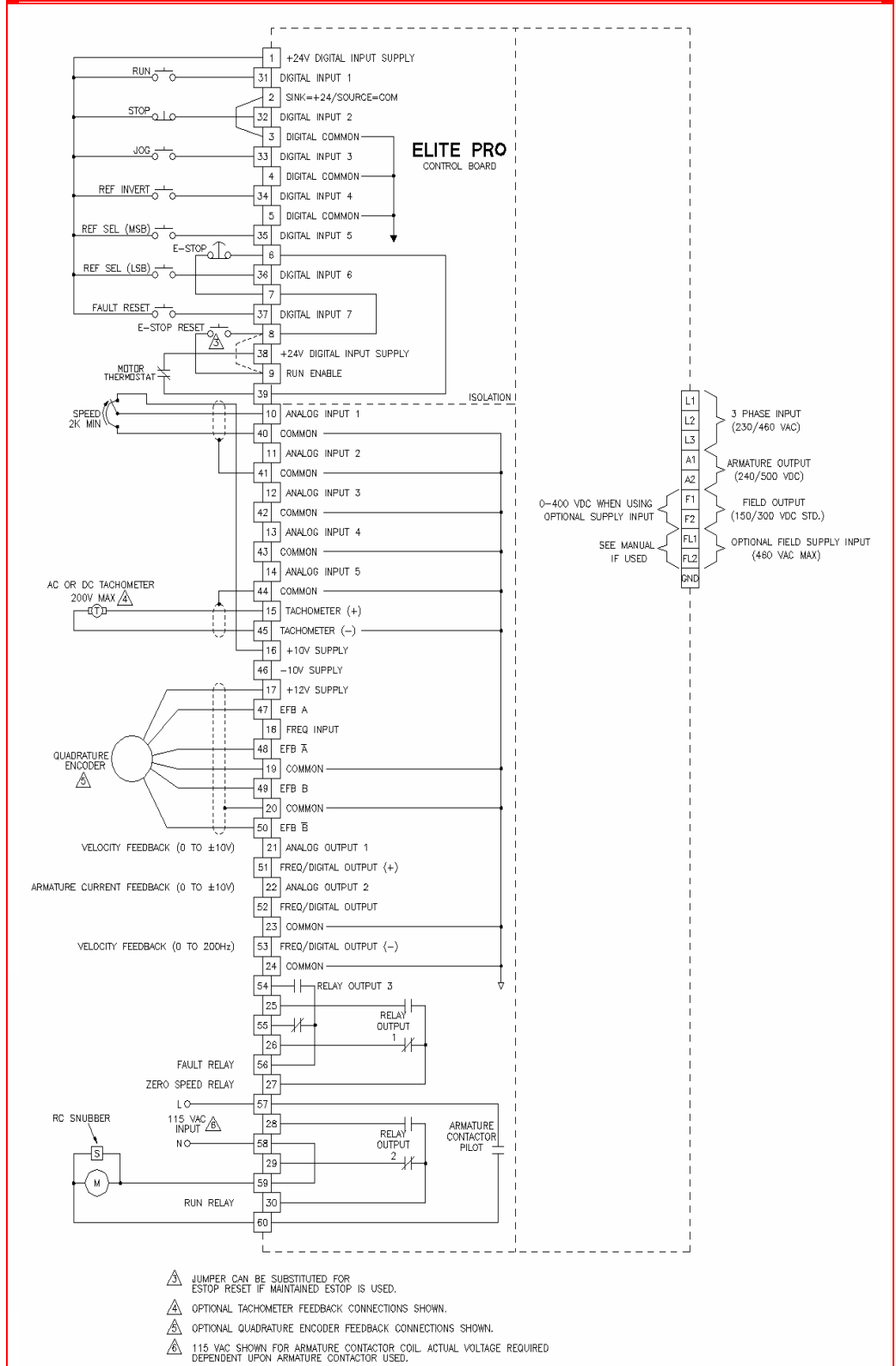
The heart of the Elite[®]Pro is a high speed Digital Signal Processor (DSP) designed specifically for motor control applications. The speed and processing power of the DSP are further enhanced by the skillful use of five (5) additional co-processors to handle critical high speed timing functions as well as keypad and external communications. The resulting design is very capable of handling basic control algorithms along with advanced algorithms for system functions such as PID Dancer Controls, Center Winder Controls, Tension Controls, and Customized Control Functions to meet user requirements.

The power section design for the Elite[®]Pro follows the same conservative design practice that Carotron's customers have come to appreciate in all of Carotron's designs. We provide a regenerative and non-regenerative drive package that is capable of full load operation in a 55°C ambient. Compare this to our competitors that design to ambient levels of 35° to 50°C.

Standard customer interface to the Elite[®]Pro is via a four-line alphanumeric, backlighted LCD display. English text and menu screens with soft-keys simplify the drive programming and eliminates the need to memorize numeric codes. A User programmable section is provided to allow frequently used monitoring screens or programming screens to be located together for specific machine functions. Two levels of password protection can be activated to prevent unwanted changes of drive parameters. RS-232 and RS-485 communications also allow interface to computers and PLC's.

Processing power, conservative design, user friendly programming and Carotron's application and technical support make the Elite[®]Pro a valuable tool for any application.

CONNECTIONS



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