



SSt-Eclipse, Model E6xx/7xx

DSP-Based Digital Servo Drives

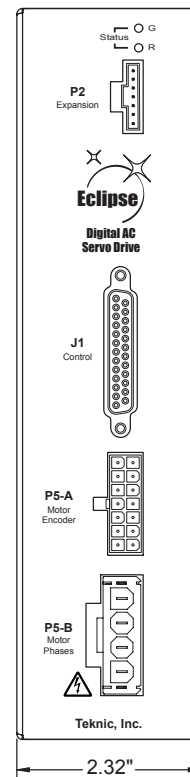
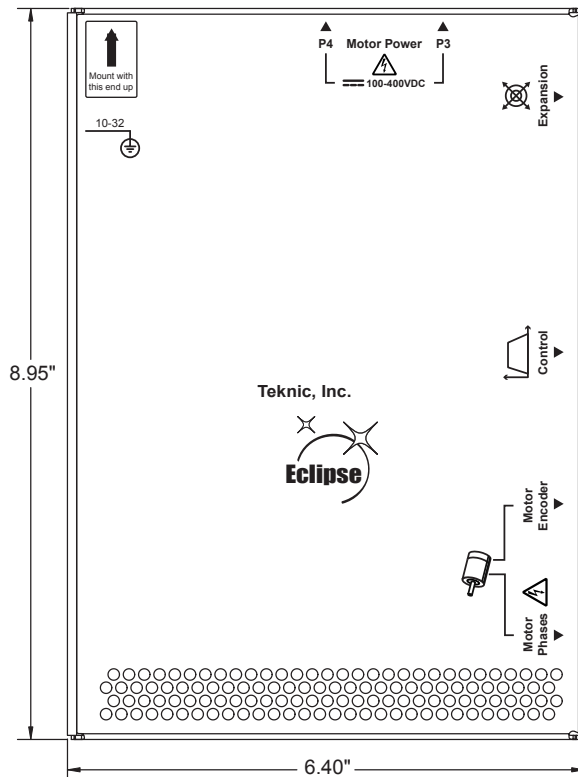


FEATURES

- Exceptional servo control for path following and point-point applications, includes: advanced estimators, electronic inertia matching and smooth operating multi-state feed-forward terms.
- Ultra-reliable, high power design with models up to 15kW.
- Integrated, extruded heat-sink/case (with fan on higher-power models) does not require additional heat sinking elements.
- Universal motor interface drives brush, 3-phase brushless, 2-phase brushless, voice-coils, etc.
- Full galvanic isolation between control signals and servo power/phases minimizes noise problems and speeds electrical and safety integration.
- Digital filtering of input and feedback signals provides high immunity to electrical noise while warning of noisy conditions.
- Daisy chained DC power connectors and internal protection minimizes wiring and safety integration, especially when used with the Amazon Intelligent Power Controller (IPC).
- Load+Motor feedback mode available for stable and precise end-point positioning.
- Enhanced diagnostic tools speed troubleshooting and enable detailed system analysis.
- RoHS compliant.

MODEL LIST

| Model | Peak Current [A] | RMS Current [ARMS] | Bus Voltage [V _{DC}] |
|--------------|------------------|--------------------|--------------------------------|
| SSt-E600-KCx | 11 | 4 | 100-400 |
| SSt-E610-KCx | 13 | 5 | 100-400 |
| SSt-E720-RCx | 16 | 7 | 100-400 |
| SSt-E730-RCx | 23 | 12 | 100-400 |
| SSt-E750-RCx | 30 | 15 | 100-400 |
| SSt-E760-RCx | 50 | 20 | 100-400 |



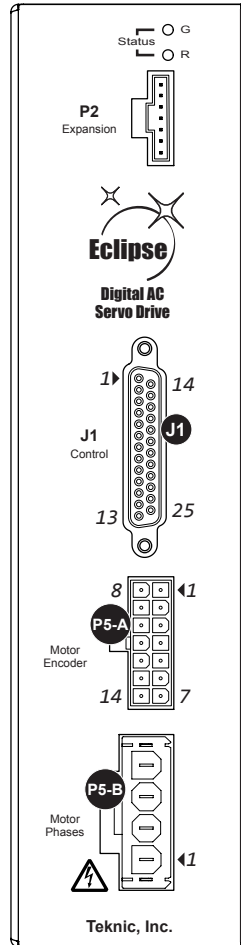
SPECIFICATIONS

| | | |
|---|-----------------------------|---|
| GENERAL | Dimensions, in (mm): | 8.95 (227) x 6.40 (163) x 2.32 (59) |
| | Weight, oz (g): | 53.5 (1515) |
| ENVIRONMENTAL | Operating Temperature: | 0-40°C |
| | Humidity: | 0-90%, non-condensing |
| COMPLIANCE | Electrical safety: | EN61010, UL508C |
| | EMI: | EN 61326 |
| | Machine safety: | EN 954-1, with proper power control |
| OUTPUT POWER | PWM ripple frequency: | 28kHz, center balance vector type |
| | Conversion efficiency: | >99% |
| COMPENSATOR | TSPD: | 35µS |
| | Position/velocity control: | Enhanced PIV with proprietary velocity, acceleration and jerk estimators, Inertia Matching Technology (IMT), Regressive AutoSpline (RAS), and Anti-Hunt. Provides velocity, acceleration, jerk and friction feed-forward gains. |
| | Torque control: | Synchronous vector with DQ decoupling, SmartSaturation, and auto calibration |
| ENCODER | Primary (Motor) Interface: | Single-ended or differential (user-selectable) |
| | Secondary (Load) Interface: | Differential |
| | Max count rate: | 24 MHz, quadrature, count rate |
| | Features: | Bad sequence detection, digital filtering adjustable from 100kHz to 40MHz |
| MOTOR COMPATIBILITY | Requirements: | Rotary brush or 3-phase brushless rotary/linear motor, galvo, voice coil |
| LIMIT INPUTS | Interface: | TTL with 2kΩ pull-up, digitally filtered |
| HALL SENSOR INPUTS | Specifications: | 5kΩ pull-up to +5VDC |
| | Features: | Digitally filtered, used to set torque/force vector on initialization (drive may also operate in sensorless mode) |
| DEDICATED INTERFACE INPUTS/OUTPUTS | Outputs: | Drive ready, move done, in-range, all-systems-go, encoder and limit pass-through, +5VDC |
| | Inputs: | Enable motor, Mode (engage/disengage drive features such as torque/force foldback, hardstop homing, electronic gear-shift, etc.), digital step and direction, ±10V torque/force, ±10V velocity, encoder, limits, etc. |
| REAL-TIME MONITOR PORT | Features: | Configurable filtering, sync pulse, scaling/zoom, non-volatile |
| | Output variables: | Position error, actual velocity, commanded velocity, velocity error, commanded torque/force, actual torque/force, SGN velocity, SGN position, measured position, commanded jerk, commanded acceleration, max phase voltage |
| PROTECTION AND SAFETY FUNCTIONS | Drive protection: | Short circuit (phase-to-phase, phase-to-ground), over-temperature, over voltage, over current, protected for open windings, fused |
| | Motor protection: | True RMS torque/force limiting, automatic speed-limit, motor jam detection, over temperature |
| | Mechanical safeguards: | Hardstop detection, limit switch servoing, adjustable tracking error limit and shutdown thresholds, adjustable torque/force limits, adjustable speed limits |
| | Electrical isolation: | 6.0mm (0.236") |
| STEP AND DIRECTION MODE | Maximum step rate: | 24MHz |
| | Features: | Digitally filtered, adjustable from 100kHz to 24MHz |
| ±10V ANALOG MODE | Format: | Differential input, ±10V range, >10kΩ, 10% of peak per volt scale |
| INPUT SUPPLY | Input voltage: | 130-360VDC (derived from IPC @ 90-250VAC, single or 3-phase) |
| | Input current: | Up to 5A RMS, 20A peak (application dependant) |
| COUNTRY OF ORIGIN | Manufactured in: | USA |
| WARRANTY | Duration: | 3-year standard, 5-year optional |

CONNECTOR DETAIL

| P5-A-Motor Encoder Connector | |
|------------------------------|---------------------|
| PIN# | DESCRIPTION |
| 1 | GND I/O |
| 2 | ENCODER I~ |
| 3 | ENCODER B~ |
| 4 | ENCODER A~ |
| 5 | GND I/O |
| 6 | COMM. T-R |
| 7 | MOTOR THERMOSTAT IN |
| 8 | CHASSIS |
| 9 | ENCODER I |
| 10 | ENCODER B |
| 11 | ENCODER A |
| 12 | +5V OUT |
| 13 | COMM. R-S |
| 14 | COMM. S-T |

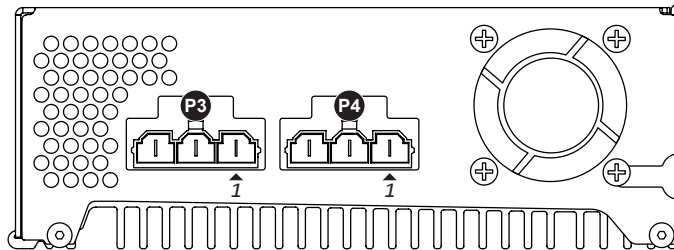
| P5-B-Motor Phase Connector | |
|----------------------------|--------------------|
| PIN# | DESCRIPTION |
| 1 | MOTOR PHASE SHIELD |
| 2 | MOTOR PHASE T |
| 3 | MOTOR PHASE S |
| 4 | MOTOR PHASE R |



| J1-Controller Connector | |
|-------------------------|--------------------------|
| PIN# | DESCRIPTION |
| 1 | CHASSIS |
| 2 | RS-232 DATA INTO DRIVE |
| 3 | RS-232 DATA OUT OF DRIVE |
| 4 | ENABLE~ |
| 5 | READY~ |
| 6 | STEP |
| 7 | GND |
| 8 | DIR |
| 9 | ANALOG IN + |
| 10 | ANALOG IN - |
| 11 | ENCODER I (IN/OUT) |
| 12 | ENCODER B (IN/OUT) |
| 13 | ENCODER A (IN/OUT) |
| 14 | RESERVED |
| 15 | HLFB~ |
| 16 | MODE~ |
| 17 | -LIMIT~ |
| 18 | +LIMIT~ |
| 19 | +5VDC OUT |
| 20 | +5VDC IN |
| 21 | GND |
| 22 | RESERVED |
| 23 | ENCODER I~ (IN/OUT) |
| 24 | ENCODER B~ (IN/OUT) |
| 25 | ENCODER A~ (IN/OUT) |

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| P3,P4-Power Connector | |
|-----------------------|--------------------|
| PIN# | DESCRIPTION |
| 1 | V+ |
| 2 | V- |
| 3 | CHASSIS/SHIELD GND |



Eclipse 6xx/7xx Servo Drive
(end-on view)