**Tension Controller**

The Double E Tension controller is a DIN rail mountable controller that is configurable for multiple uses. The unit can be used standalone with color TP HMI or integrated into the user’s logic system.

### Open Loop Torque Controller

The Double E controller uses a distance measurement sensor to monitor roll diameter as the roll unwinds. The controller compares values registered by the diameter sensor with set values then signals the brake or unwind drive to adjust accordingly.

### Closed Loop Unwind Controller

The controller uses a dancer roll system or load cells to directly sense web activity. This signal is then compared to a setpoint, and through a PID loop, provides real-time feedback to an unwind brake or drive to correct for any variations in tension.

### Closed Loop Unwind Controller with Inertia Compensation

The controller operates as described above in closed loop mode, but also uses a diameter input to measure the diameter (and effectively the mass) of the unwinding roll. The roll size value is used to adapt the PID loop as well as the output signal when the roll is accelerating or decelerating for optimal system response at any roll size.

### Intermediate Tension Zone Controller

The controller is connected to load cells or a dancer in the middle of a web process between driven nip or pull rolls. The controller PID output adjusts the speed difference between the two drives and is either increased or decreased to correct for variations in tension.
Features:
- One controller style for all applications
- Easy operator interface color touch screen HMI
- Simple calibration
- Optional wired integrated system cabinet
- Measured tension output signal for secondary display
- Automatic/Stop mode through remote switch
- Optional remote tension setpoint through analog input
- Selectable analog inputs (mV load cells, 0-10V, 4-20mA)
- Selectable analog outputs (0-10V, 4-20mA)
- RS232 Modbus serial communication
- Can be used with Double E load cells or existing load cells

Technical Specifications - Controller

Analog Inputs (4) - 12bit with 10ms sampling time
- AI0 – 0-40mV for non-amplified load cells
- AI1 – 0-10V for remote tension setpoint
- AI2 – selectable 0-10V or 4-20mA can be assigned to roll diameter or speed
- AI3 – selectable 0-10V or 4-20mA can be assigned to amplified load cell or dancer

Analog Outputs (2) - 16bit with 10ms refresh rate
- AQ0 – selectable 0-10V or 4-20mA for control output to brake or motor driver
- AQ1 – selectable 0-10V or 4-20mA for dancer air pressure or remote display

Digital Inputs (6) - 3-30V range
- DI0 – AUTO/STOP contact
- DI1 – PRIORITY STOP contact
- DI2 – ACCEL contact
- DI3 – DECEL contact
- DI4 – Speed encoder input – high speed pulse
- DI5 – parameters set contact

Digital Outputs (2) - 24V high state, max combined current draw 200mA
- DQ0 – Alarm 1 (tension / position)
- DQ1 – Alarm 2 (tension / position or diameter)

POWER SUPPLY – 24VDC / 500mA max
OPERATING TEMPERATURE – 0 to 50 deg C
INGRESS – IP20

Technical Specifications - HMI

Display 7” 16:9 TFT
Resolution 800 x 480 pixel
Color 65,536 colors
COM2 RS232 connected to controller
Power Supply 24VDC / 200mA max
Operating Temperature 0 to 50 deg C
Operating Humidity 10 to 90% non-condensing
Ingress IP65 (front panel)
FCC Compatibility Complies with FCC Class A

Certified