



# APPLICATION DATA

No. 8710E10

## E10 AUTOMATIC TENSION CONTROLLER

### DESCRIPTION

The E10 is an automatic closed-loop rewind tension controller of advanced design. It compares the actual tension, measured by DFE strain gauge transducers, to the desired tension, set by the operator. The difference between the actual and desired tension produces a compensated DC voltage output, which is used to vary the torque produced by the rewind clutch. Voltage ranges for all popular clutches are available.

All operator devices are mounted in an aluminum legend plate on the hinged cover of the industrial quality steel enclosure. If the enclosure is not needed, the controller can be supplied as a pre-wired and tested unit, with the legend plate connected to the electronics panel with a wire harness. A large tension meter displays actual tension, in pounds. The legend plate includes an output voltage meter.

Operation of the E10 is simple. The operator turns the tension set point knob until the desired tension is shown on the meter. The controller will automatically maintain this tension regardless of changes in web speed or roll diameter.

A separate manual circuit is provided, with a tracking circuit which allows bumpless switching between Manual and Auto. Sample & Hold and Multiply/Divide circuits provide smooth operation during flying splices.

Construction of the E10 is modular. All electrical connections to the circuit cards are made by terminal strips which can be unplugged, allowing for quick and easy replacement. Test points on all cards make troubleshooting convenient.

Designed with safe operation in mind, the E10 includes a positive disconnection of the clutch, by a relay in the Tension On/Off circuit. This relay can be operated by an optional circuit to provide automatic interruption of voltage to the clutch if a web break or unusually high tension occurs.



### BENEFITS

- Automatic control of tension. No manual adjustments needed.
- Actual web tension is displayed on meter. No guesswork.
- Easy to operate. No skill or training needed.
- Simple to install and fast to start up.
- Tension transducers require very little space in the machine.
- Wide tension control range without recalibration.
- Permits higher running speed without losing control of web.
- Reduces web breakage, registration, and stretching problems.
- Fast payback.
- Tension transducers have negligible movement, so the web is not affected.
- Enables the machine operator to easily determine the proper tension for any web and consistently reproduce it at any time.
- Eliminates troublesome dancer rolls.
- Compatible with automated factory systems.

# DOVER FLEXO ELECTRONICS, INC.

# APPLICATIONS

The E10 is used on any machine having a continuous web process, such as printing presses, coaters, laminators, slitters, sheeters, label presses, extruders, metallizers, and inspection machines.

Typical web materials include paper, plastic films, foils, rubber, laminates, wallpaper, linoleum, textiles, non-wovens, tapes, filaments, ribbons, and wire.

The E10 will automatically control rewind tension by operating electric friction clutches, magnetic particle clutches, eddy current clutches, or other types of electric clutches.

The E10 will reduce or eliminate tension related problems such as web breakage, stretching or looseness, misregistration, repeat length variation, wrinkling, curling, and coating thickness variation. It will also help reduce waste during starts, stops, and splicing, and will help produce consistent product quality.

# STANDARD FEATURES

- NEMA 12, 13 steel enclosure, 12x14x6, with all operator devices in cover. Wall mounted.
- MS connectors for transducer cables.
- 3/8" hole for AC power wiring.
- Removable circuit cards with terminal strips that unplug.
- Operator devices include: 6" analog tension indicating meter, AUTO mode tension setting knob, lighted pushbutton for AC Power ON, lighted pushbutton for Tension ON, rotary switch for AUTO/MANUAL mode selection, output adjustment knob and output voltmeter for MANUAL mode.
- 120 volt 60Hz AC power input.
- 0-100 millivolt DC output, proportional to tension.
- Choice of standard meter scales: 0-1, 5, 10, 25, 50, 100, 150, 250, 500, 1000.
- Automatic and Manual modes of operation.
- Sample & Hold output circuit with ratio adjustments (multiply and divide) for flying splice operation.
- Maximum and Minimum output adjustments.
- Taper tension circuit (requires rider roll pot. E374B, and switch, at extra cost).
- Emergency stop circuit.

- Bumpless switching between MANUAL and AUTO.
- Output voltmeter.
- Transient voltage protection.
- Positive relay disconnect for AC power and Tension OFF.
- Soft start circuit with disable switch.
- Used with any DFE tension transducers.

# SPECIFICATIONS

- Power input ..... 120 volts 60Hz @ 4 amp
- Power connection ..... 3/8" hole for conduit connector
- Output voltage range .... 0-90 volts DC @ 3 amp  
(optional) 0-45 volts DC @ 5 amp  
(optional) 0-24 volts DC @ 7 amp
- Transducer power supply ..... 5 volts DC, regulated
- Transducer signal ..... 500 millivolts DC per pair at rated load
- Transducer cable connectors ..... Amphenol MS3102A-10SL-3P
- Zero range ..... 95% of the load rating of 1 transducer, minimum
- Calibration range ..... 25:1
- Temperature range ..... 0 to 40° C
- Maximum output adjustment range .... 0 to 100%
- Minimum output adjustment range ..... 0 to 20% of maximum
- Taper tension range ..... 0 to 50%
- Tension meter ..... Heavy duty, 2%, taut band, with solvent proof front
- System accuracy ..... 1% to 3% typical
- Manual output range ..... 0 to 100% of rated output voltage
- Weight ..... 32 lbs.
- Output multiplier range ..... 10:1
- Output divider range ..... 1:10

## OPTIONS

No.	Description
CC	E10 less enclosure and operator devices.
H6	E10 less enclosure, but with 6' long wire harness to legend plate, with all operator devices installed and wired.
ATM	Auxiliary tension meter for remote mounting.
RME	Auxiliary or remote tension meter in 6"x8"x4" enclosure.
DM	Digital meter: 3½ digit, red LED ½" high (includes 5V power supply).
420M	4-20 milliamp DC output, proportional to tension.
020M	0-20 milliamp DC output, proportional to tension.
10V	0-10 volt DC adjustable output, proportional to tension. Range = 0-3.5 to 0-13.
DC	Dual calibration (includes dual meter scale and switch).
NMS	Non-standard meter scale (single or dual range, specify scale).
220	220 volt 50Hz AC power input.
ST	Single transducer operation (except NW).
5V	Extra 5 volt DC power supply (used with digital meter).
APC	Attached power cord, Type SJ, 3 conductor, 5' long.
TLS-L	Low tension detector with SPDT relay output.
TLS-H	High tension detector with SPDT relay output.
TLS-LH1	Low and high tension detectors with one SPDT relay output and switch.
TLS-LH2	Low and high tension detectors with two separate SPDT relay outputs.
RO	Reverse output.
RS	Remote tension on/off switching.
TT	Taper tension, by diameter computer, using two 50 volt DC tachometers.
TTS	Taper tension on/off switch (included in option TT).
45V	45 volt DC output @ 5 amp (may require large enclosure).
24V	24 volt DC output @ 7 amp (may require large enclosure).
LE	Large enclosure: 16x14x10. May be required for 120 VAC input, 24 VDC output; and 220 VAC input, 45 VDC and 24 VDC output; depending on output amperage required. Consult factory.
RTA	Remote tension amplifier (no tension amplifier in E10).
	Consult factory for special requirements.

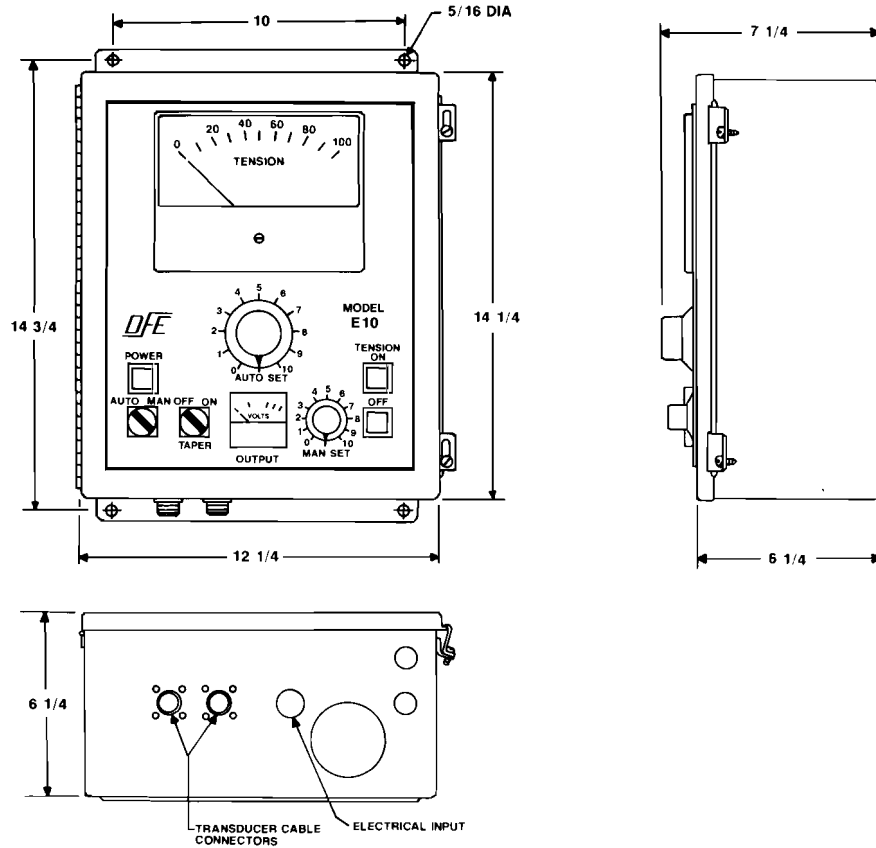
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**TO ORDER:** Specify model, option numbers, and meter scale. Example: E10-H6, TLS-L, 0-50.

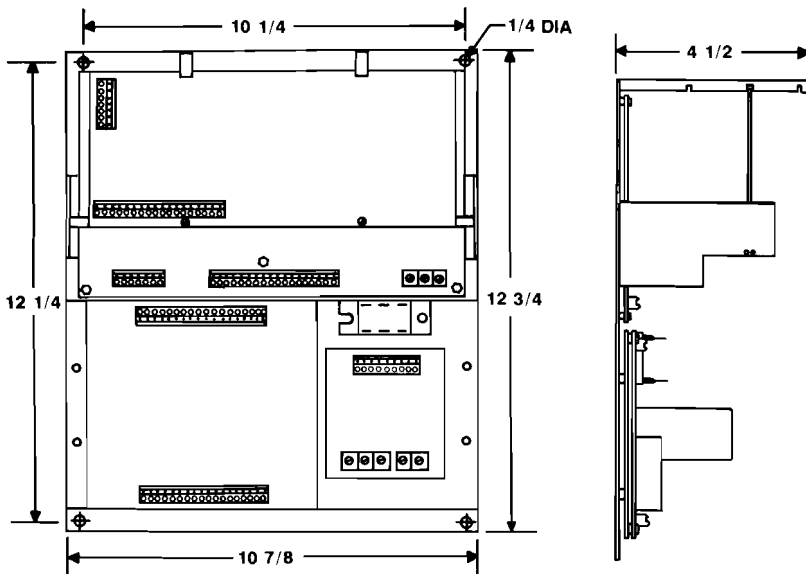
# DIMENSIONS

(Expressed in inches)

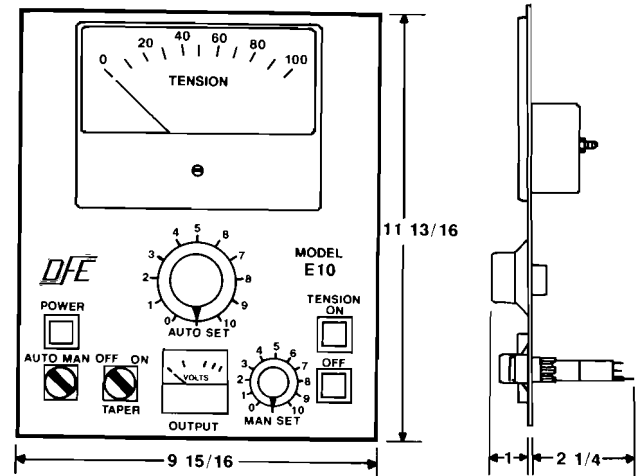
## ENCLOSURE



## PANEL



## LEGEND PLATE



**DOVER FLEXO ELECTRONICS MANUFACTURERS:** Tension Transducers, Tension Indicators, Rewind Tension Controllers, Unwind Tension Controllers, D.C. Motor Tension Controllers, Pneumatic Tension Controllers, and Electric Tension Controllers.