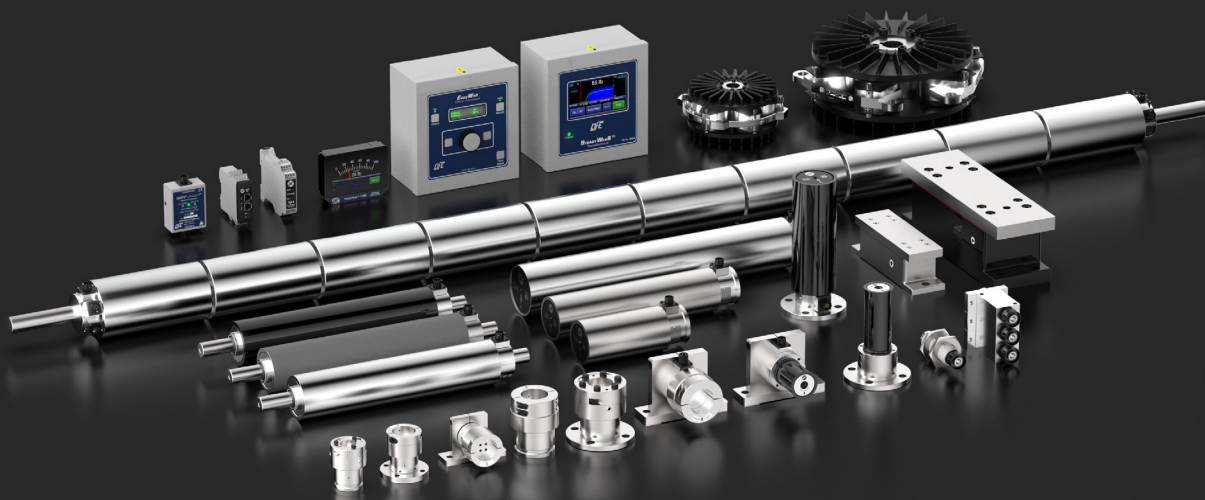




PRODUCT GUIDE

TENSION MEASUREMENT, DISPLAY & CONTROL



Tension Transducers • Amplifiers • Indicators
Controllers • Brakes • Idler Rolls

2025



Rapid
Delivery



Responsive
Tech Support



5 Year
Warranty



Premiere Quality
Assurance

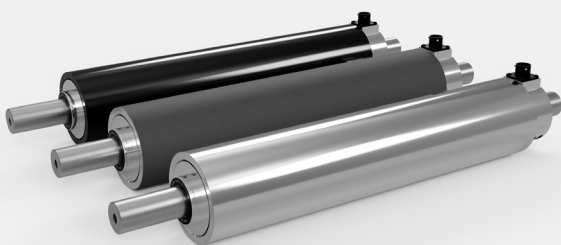


Manufactured
In The USA

TENSION TRANSDUCERS

- High-performance semiconductor strain gauge load cells for web and filament applications
- Output a proportional signal to a tension amplifier, indicator or controller
- Stainless steel and aluminum construction for high strength and corrosion resistance
- Manufactured in the USA, backed by a 5 year warranty

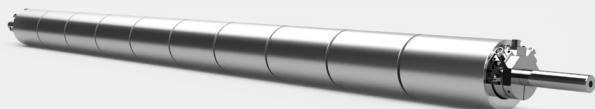
TENSION ROLL® TRANSDUCERS - MODEL TR



Ultimate performance and robust reliability set the Tension Roll® transducer apart from other sensing solutions on the market. A dead-shaft idler roller with tension sensors (load cells) integrated into each roll end, the Tension Roll® transducer is ideal for installation on original equipment or for retrofits since it arrives pre-assembled and ready-to-install between the facing sides of a machine frame.

- Aluminum, carbon steel and stainless steel roll shells available
- Load ratings: 12 - 400 lbs (55 - 1,800 N)
- Roll diameters: 2.25, 3, 4, 5 and 6 inches
- Roll lengths: 6 to 84 inches
- Custom roll finishes available

SEGMENTED TENSION ROLL® - MODEL STR



The Segmented Tension Roll® transducer is designed to measure the tension of multiple narrow webs running independently or multiple data points (2 per segment) across a continuous web width. Available with a support frame to minimize shaft deflection.

- Minimum roll segment length: 6 inches
- Maximum number of roll segments: 10

SHAFT-END TRANSDUCERS - MODEL C



The industry standard in cartridge-style tension load cells. The Model C transducer is available in a variety of sizes, mounting styles and load ratings. The Model C is sealed to prevent ingress from dust and water for long operating life and low maintenance.

- Dead shaft and live shaft models
- Five mounting styles: Screw, Flange, Pillow-Block, Through-Frame and Piloted-Flange
- Dual cantilevered sensing-beam for high accuracy
- Load ratings from 10 - 800 lbs (45 - 3,560 N)
- High overload capacity - up to 2,500 lbs (11,125 N)

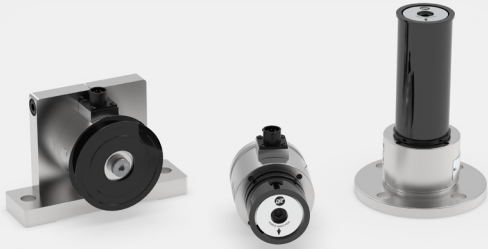
NARROW WEB TRANSDUCERS - MODEL NW



The NW transducer combines a cantilevered idler roll and two tension transducers in one integral unit — for fast, easy installation, high accuracy and web tracking performance. Roll widths from 6 to 20 inches (152 - 508 mm). Choose single-bolt mounting or a four-bolt flange.

- Twin load cells and idler roll combined in one unit
- Load ratings from 12 - 400 lbs (55 - 1800 N)
- Optional built-in digital display meter
- Three roll diameters: 2.25, 3 and 3.5 inches
- Low-inertia 3-inch diameter and custom roll finishes available

VERY NARROW WEB TENSION TRANSDUCERS - MODEL VNW



The VNW transducer measures process tension in narrow webs (up to four inches wide), ribbon or filament. It mounts cantilevered on process machinery for unwind/payoff, rewind/take-up or intermediate zone applications. Robust construction and impressive overload capability.

- Easy to install
- Provide your own wheel or select a DFE option
- A wide range of ribbon, filament and adapter wheels are available
- Load ratings from 10 - 400 lbs (45 - 1,825 N)
- High overload capacity - up to 1200 lbs (5,338 N)

TRI-WHEEL™ TENSION LOAD CELL - MODEL TW



Ribbon and Filament Tri-Wheel™ tension load cells are modular fixtures designed to be installed individually or stacked in an array. The system incorporates a set of wheels with adjustable positions, able to accommodate multiple wrap angle options.

The minimum wrap angle position can be helpful when working with high tension applications or rigid materials with bend limitations. Larger wrap angles shift the measurement range of the load cell, increasing accuracy and resolution for a given load rating. Hard coat anodized aluminum, hardened stainless steel and ceramic wheels are available.

LOW TENSION TRANSDUCERS - MODEL LT



Compact, durable transducers for measuring light tension in fiber, filament or ribbon winding applications. The dual cantilevered beam provides torsional stiffness, strength and accuracy. Available in stackable or threaded through-frame mounting designs.

- High-performance semiconductor strain gauges
- Load ratings from 50g - 2000g (0.5 N - 19.6 N)
- Aluminum and ceramic ribbon and filament wheels available
- Custom wheel designs also available

HEAVY-DUTY TENSION TRANSDUCERS - MODEL F



Model F Series transducers mount under pillow-block bearings at each end of an idler roll shaft. Designed for use in demanding tension measurement environments, the F transducer shell has a one-piece aluminum base with a removable stainless steel top plate. A rubber seal between the base and top plate prevents water ingress and dust contamination. The transducer's electrical connector is located at the end of a pig-tail cable for simpler access during installation.

- Install under any standard pillow-block bearing
- Corrosion resistant for harsh environments
- Sealed against water intrusion — designed to meet IP65
- Tethered top plate for safety
- Load ratings from 100 - 10,000 lbs (445 - 44,500 N)
- Oversized top plate option to accommodate large bearing blocks
- All stainless steel versions also available

TENSION AMPLIFIERS

Tension amplifiers scale return signals from DFE load cells to proportional 0-10 VDC, 4-20 mA or digital values used by PLCs, motor drive systems and data loggers to control or monitor tension.

QUIK-CAL™ DIGITAL CALIBRATION

- No tension display needed
- No screwdriver needed
- No second person needed
- Eliminates drift associated with worn cal-pots

ETHERNET TENSION AMPLIFIER - TA500

CE



The TA500 tension amplifier is a compact, single channel tension transducer interface with EtherNet/IP™ or EtherCAT® connectivity. In addition to Ethernet connectivity, the TA500 provides simultaneous 0-10 VDC and 4-20 mA isolated tension outputs. Built-in diagnostic capability quickly identifies faulty load cells, incorrect wiring, calibration issues and amplifier ADC/DAC failure.

- DIN rail mount
- Web configuration and monitoring interface (EtherNet/IP™ version)
- EDS / ESI file support
- ODVA / ETG certified
- CE-marked

EtherNet/IP™ EtherCAT®

TRUETENSION™ AMPLIFIER - TA1

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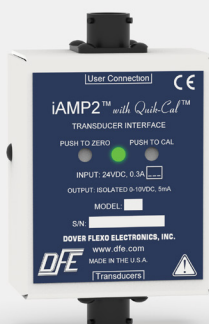


The TA1 TrueTension™ Amplifier is a compact, single-channel tension transducer interface. It can be used with DFE tension transducers (load cells) to monitor tension in any zone of web or filament processing machinery.

DFE's **Quik-Cal™** push-button zero and calibration eliminates pot adjustments and associated drift to make calibrating the TA1 simple, fast and reliable. Powered by 24 VDC, the amplifier boosts a millivolt-level tension signal from the tension transducer (load cell) and outputs an isolated 0-10 VDC and 4-20 mA proportional signal to a PLC, drive or display meter. Built-in diagnostic capability quickly identifies faulty load cells, incorrect wiring, calibration issues and amplifier ADC/DAC failure.

iAMP2™ INLINE TENSION AMPLIFIER - TI22

CE



Simplify web tension measurement with iAmp2™ amplifier modules. These enclosed miniature tension amplifiers are powered by 24 VDC and output 0-10 VDC signals proportional to tension. The iAmp2™ connects to transducers and external devices via terminal strip or cannon-style connectors.

- Compact installation footprint
- Rapid, simple installation
- 0-10 VDC isolated signal output for PLC, drive or data logger
- Includes 0-1 mA isolated output for a tension meter
- CE-marked

TENSION INDICATORS

DFE touchscreen tension indicators amplify load cell return signals, display actual tension and provide proportional signal outputs able to interface with drive systems, PLCs, computers or data logging devices.

TRUEVIEW™ TENSION INDICATOR - 1100TV



The TrueView™ 1100 is an easy-to-use, rugged, touchscreen tension indicator designed for use with high-sensitivity semiconductor strain-gage load cells. It features a bright 500 nit, impact-resistant touch screen display suitable for industrial environments.

Housed in an alloy enclosure, it is machined from solid 6061-T6 billet aluminum for superior strength and durability. Engineered with flexibility in mind, DFE's newest indicator can be DIN rail-mounted, panel-mounted (with included bezel) or affixed to a vertical column with a band-style clamp. The TrueView™ 1100 is backward-compatible with all DFE tension transducers manufactured since 1974.

- Operator lockout code
- Simple 3 step calibration procedure
- Simultaneous 0-10 VDC and 4-20 mA isolated tension outputs

TRIVIEW™ LRT TENSION INDICATOR - TI31



In addition to displaying average tension across the width of a running web, the TriView™ indicator also reads independent tension on both edges of a web process. This multi-zone monitoring allows the TriView™ to alert machine operators if manual adjustments are needed to equalize side-to-side tension and maintain optimum quality. Minimum and maximum tension limits can also be set to warn operators of potential web breaks, stretching or wrap-up incidents.

- **Quik-Cal™** Zero and Calibration saves setup time
- 5-inch, high-visibility touchscreen display interface
- High and low Tension Limit Switch (TLS) capability
- 0-10 VDC and 4-20 mA isolated tension outputs

EXPERIENCE THE 'DOVER DIFFERENCE'

Dover Flexo Electronics is the value and innovation leader in the industries we serve. Our goal is to deliver superior products at reasonable prices with an emphasis on quality, performance, reliability and technical support. We appreciate the opportunity to earn your trust and help make your future projects a success.

Please contact us today to discuss your latest project requirements, or provide feedback from a recent customer experience.

Phone: 603.332.6150 Website: www.dfe.com E-mail: sales@dfecom



**Rapid
Delivery**



**Responsive
Tech Support**



**5 Year
Warranty**



**Premiere Quality
Assurance**



**Manufactured
In The USA**

All DFE products are manufactured in Rochester, NH, USA from a combination of US and globally-sourced materials.

AUTOMATIC TENSION CONTROLLERS

Set your desired tension and the controller will maintain it. Easy-to-configure DFE controllers automatically compensate for variations in roll diameter, speed and web material characteristics.

- Choice of output modes to be used with a pneumatic or electric brake, clutch, or variable speed drive
- Large, easy-to-use, easy-to-view tension displays
- Choice of metal enclosure or panel-mount form factors
- Standard emergency stop, auto/manual control modes, bumpless switching and soft start features

DIGITAL TENSION CONTROLLER - STEADYWEB 6™



With closed-loop load cell feedback, our flagship SteadyWeb 6™ tension controller maintains a precise tension setpoint in any zone to improve process consistency. The 5-inch color touchscreen display simplifies setup and operation, for quick access to job presets or setpoint adjustment.

- Choice of enclosure or panel-mount form factor
- 5-inch touchscreen display
- Storage and recall of up to 30 job setups
- 0-10 VDC, 4-20 mA, 0-24 VDC and pneumatic control output options
- Diameter, taper tension and acceleration compensation
- Diameter min/max alarm trip

DIGITAL TORQUE CONTROLLER - EASYWEB™



A budget-friendly open-loop controller, the EasyWeb™ calculates the change in roll diameter throughout a winding or unwinding process and adjusts the torque output of your drive, clutch or brake to compensate. This web tension management helps prevent breaking, stretching, wrinkling or curling. The EasyWeb™ uses an input signal from line-speed and roll-speed tachs or from an ultrasonic sensor or rider roll.

- For center-driven unwind or rewind applications
- Easy-to-use interface with OLED display, scroll knob and soft keys
- Choice of inputs and isolated control output
- Diameter min/max alarm
- Taper tension

DEAD SHAFT IDLER ROLLS

DFE's precision-machined idler rolls are manufactured to exacting standards and are perfect for installation on web presses and converting machinery.

Classic dead shaft idler rolls are available in 3, 4, 5 and 6 inch diameters. The classic idler design incorporates a robust 0.5 inch roll shell wall thickness and 1.25 inch shaft diameter. These attributes support performance in high tension applications or the need for periodic roll resurfacing.

Low-inertia dead shaft idler rolls deliver 40% reduced moment of inertia and are available in 3 inch diameter with 0.75 inch shafting. The cantilevered version is flange-mounted, matching the bolt circle and offset of our Narrow Web Tension Transducer.

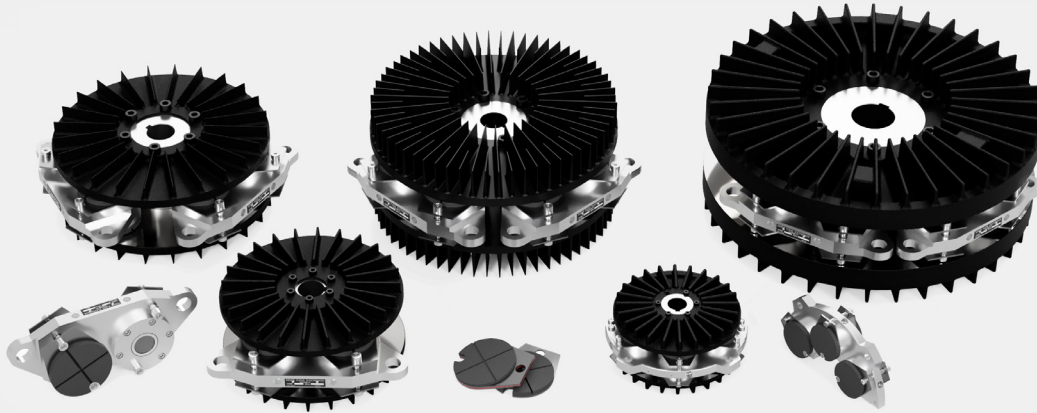


TENSION BRAKES & CLUTCHES

DFE brakes are an integral part of a high-performance unwind package, features include:

- Patented anti-squeal Silencer™ friction pads
- Limited-travel pistons that never scratch the disks
- Time-tested industrial design
- Stress-relieved, cast iron discs
- Hassle-free friction pad replacement with no tools required
- Asbestos-free friction pads in high or low coefficients of friction

DUAL DISC PNEUMATIC BRAKES



DFE pneumatic brakes are designed for hassle-free operation, enabling friction pad changes in seconds, without tools. Cylinders can be actuated individually. Piston return springs prevent diaphragm puncture, increasing brake reliability and longevity.

- Wide, adjustable torque range up to 17,990 lb-inches
- Available in five sizes to accommodate most applications
- Heat dissipation capacity from 5 to 49 hp
- 5 year warranty

ELECTRIC BRAKES & CLUTCHES



DFE distributes Placid Industries' complete line of electric brakes and clutches to customers located in North America.

- Wide torque range with ultra-smooth engagement, perfect for tension control applications
- Magnetic particle brakes & clutches
- Hysteresis brakes
- 1 year warranty
- Made in the USA

CUSTOM-ENGINEERED SOLUTIONS

For special requirements that fall outside of our standard product offering, the DFE Special Product Request department provides additional engineering resources to create a design that delivers all of the features that you require for turn-key start-ups.

Examples include:

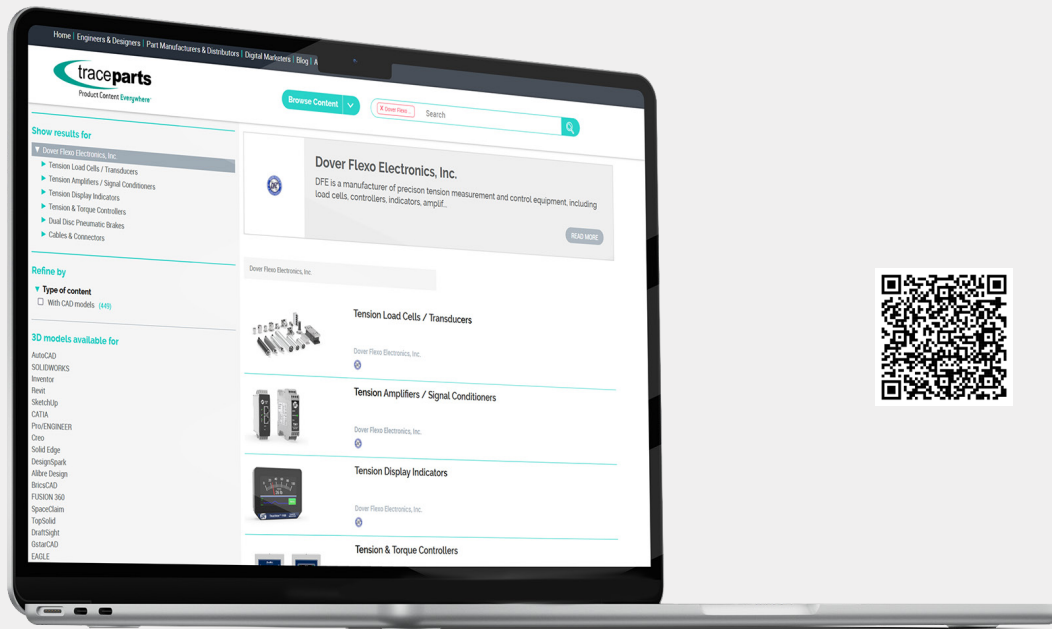
- Stackable fixtures for ribbon or filament tension control applications
- Multiple indicators arrayed in a rugged enclosure
- Low-inertia Tension Roll® for ultra-light tension measurement
- Large diameter Tension Roll® with custom machined shaft ends
- Plasma-coated Tension Roll®
- Polyurethane coated, 10 segment Tension Roll®



CAD LIBRARY & CONFIGURATORS

Download CAD models for free in over 60 native formats on the DFE or Traceparts website.

<https://dfe.com/support-resources/knowledge-base/cad-library/>



TYPICAL RUNNING TENSIONS OF COMMON WEB & FILAMENT MATERIALS

Material	English		Metric		Material	English		Metric	Material	English		Metric		
	Weight (points)	Tension (lbs/lin. inch)	Weight (g/m²)	Tension (kg/cm)		Tension (lbs/in./mil)	Tension (kg/cm/mm)			Copper Wire (15,000 psi)	Tension (lbs)		Tension (kg)	
Paperboard	8	3.0	105	0.54	Aluminum Foils	0.5	3.52	#16 (.051 inches)	30.00	13.6				
	12	4.0	157	0.72	Cellophanes	0.75	5.27	#20 (.032 inches)	12.00	5.5				
	15	4.5	196	0.90	Cellulose Acetate	0.5	3.52	#24 (.020 inches)	4.50	2.0				
	20	5.5	260	1.26	Mylar (BoPET)	0.75	5.27	#28 (.013 inches)	1.75	0.79				
	25	6.5	326	1.62	Polyethylene	0.25	1.76	#30 (.010 inches)	1.25	0.57				
	30	8.0	391	1.98	Polypropylene	0.25	1.76	#34 (.006 inches)	0.50	0.23				
					Polystyrene	1.0	7.03	#36 (.005 inches)	0.25	0.11				
Paper (based on 3,000 sq. foot ream)	15	0.40	25	0.135	Saran	0.15	1.05	#40 (.003 inches)	0.10	0.045				
	20	0.50	30	0.180	Vinyl	0.25	1.76	Run aluminum wire at ½ - 2/3 of these values. 15,000 psi = 103.42 MPa 1 mil = 25.4 microns = 0.0254 mm						
	30	0.75	50	0.270	Nylon	0.25	1.76							
	40	1.25	65	0.360	Wax Paper	1.0	7.03							
	60	2.00	100	0.540	For laminated webs sum the tensions for the individual webs and add 0.1 lb/inch (0.018 kg/cm) of width.									
	80	3.00	130	0.720										

