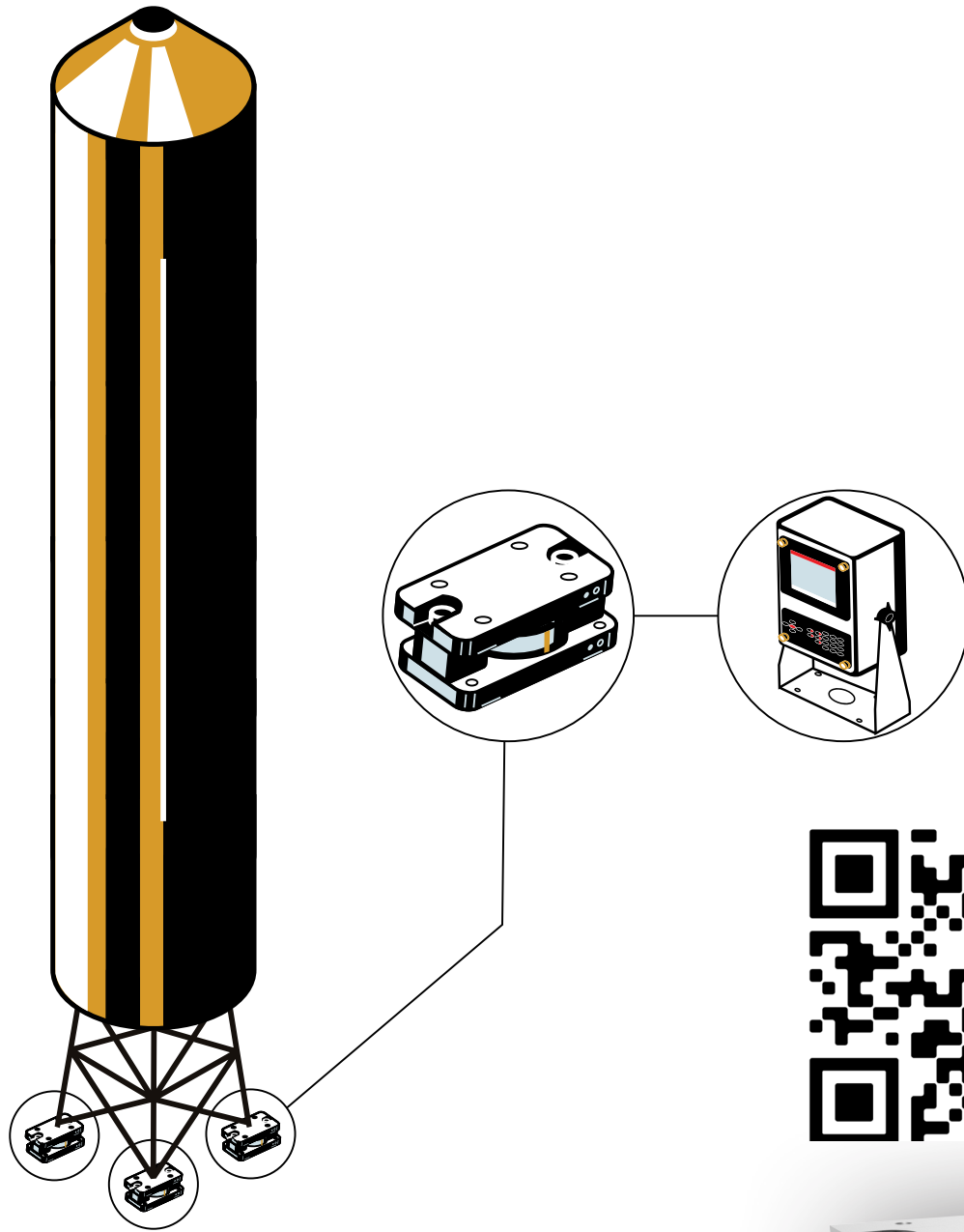
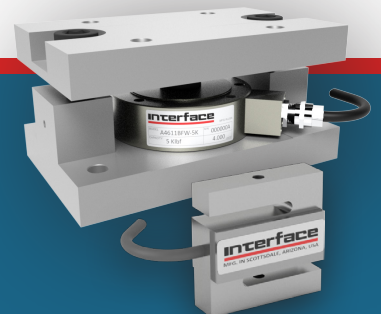


# Interface

## Agriculture Solutions



Agriculture Solutions v1.4



# Agriculture Solutions

Durable and reliable,  
Interface provides sensor  
technologies that are used  
throughout the agriculture  
industry. Our powerfully  
built load cells perform  
in the most extreme  
environments, and  
Interface's highly accurate  
measurement solutions  
continue to push the limits  
and outperform when it  
comes to **our customer's**  
**growing** needs.



## Agriculture

Cultivating plants and managing livestock looks different than past decades of working the land. Technological advancements have also made the modern farm and food production more efficient, smarter and more cost effective. Interface provides accurate and reliable measurement equipment designed to help engineers and manufacturers push the limit on the machinery that helps feed the world. Interface plays a critical role in advancements in agriculture and farming as an enabler of sensor products. We are committed to designing products that have high quality, durability and reliability

Since 1968, Interface has proven success with their high performance sensors for a number of different industries and applications. We take pride in providing our customers with products they can trust for all aspects of agriculture around the world.

Whether you are testing tractor engines or weighing feed in silos, the solutions that Interface offer are diverse in capabilities, capacities and use cases. From poultry weighing systems to drones used in crop inspections, our team of experts are able to ensure you get the right solution based on your exact requirements for equipment for your applications.

### Industry Leading Quality

Interface is celebrated for meeting and exceeding the quality needs for our customer's projects. Our products are built in accordance with A2LA, International Standard ISO/IEC 17025:2005 and ANSI/NCSL Z540-1-1994. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system.



## Solution Capabilities

- Stainless steel and rugged designs for various climates
- Environmentally sealed products used in harsh environments
- Wide variety of wireless telemetry system components to use in field
- Vast inventory of sensors and instrumentation for fast delivery
- Custom solutions designed to your exact requirements for equipment and product testing
- OEM engineered products for inclusion into your manufactured solutions

## Agriculture Solutions

# Interface provides a variety of sensors utilized in the agriculture industry, including our precision load cells, torque transducers, multi-axis sensors, wireless instrumentation and more.

As a complete solutions provider, we have a variety of force measurement products that are designed for modern agricultural testing projects and as components for OEMs. Interface offers a robust line of standard products, as well as design customized solutions. We work with our agriculture market suppliers, manufacturers and users to define the best products for each unique use case. This includes solutions that stand up in harsh environments, for material handling, used in testing complex agricultural machines, performance tracking in extreme weather conditions, engine testing and more, all ensuring maximum safety and efficiency. Here are just a few examples of how our products are used in the agriculture industry.

## Livestock Weighing

Weighing cattle is a critical process in the dairy industry. Farmers need to make sure their livestock are at a healthy weight and maintain their weight. They also want to know the optimal time for breeding based on the weight, meaning it needs to be as accurate as possible. In this use case, Interface provided four SSB Sealed Beam Load Cells. The load cells sit at the bottom of a metal weighing platform that is placed on the inside of the customer's cattle cage. Once the cow has walked onto the plate, the SSB Sealed Beam Load Cells measure the applied force pressure. With all four connected to a JB104SS Junction Box, then connected to the 480 Bidirectional Weight Indicator, combined load cells accurate weight results are displayed. They were able to determine accurate livestock weight measurements to keep them healthy and determine optimal breeding time.

## Silo Grain Dispensing

For a silo returning grain into a dispensing container, the customer wanted to measure and record the grain being put in and out of their grain dispensing container. They wanted real-time measurement as it dispenses content into a carrier truck for transportation. The customer also preferred a wireless solution. Interface suggested installing WTS 1200 Standard Precision LowProfile™ Wireless Load Cells at the legs of the grain dispensing container. The 1200 measures the distribution correlation of the grain as it is inputted and outputted from the container. Results are transmitted and displayed using the WTS-BS-1-HA Hand-held Display for multiple transmitters and logged and graphed using the WTS-BS-4 USB Industrial Base Station. Utilizing these products, the customer was able to log and graph the measurement results of the grain content during storage, dispensation and when loaded onto transportation vehicles. This solution eliminated all the guesswork and ensured accuracy in the storage and movement of the material.

## Poultry Feeder Monitoring

A customer wanted to monitor the motor that operates their poultry feeders to ensure it gave out an equal distribution of feed per poultry house, Interface suggested using the T5 Standard Precision Pedestal Mount Shaft Style Rotary Torque Transducer with the speed angle option. The transducer attached between a poultry feeder and a motor with Interface couplings. With this solution, torsion measurements can be graphed and logged using the 9850 Torque Transducer and Load Cell Indicator. This allowed the customer to monitor poultry feeders and confirm every feeder got the same amount of food distributed for safety and efficiency.

## Examples of Agriculture Applications Using Interface Measurement Solutions:

- Tractor PTO torque testing and draft control
- Livestock weighing
- Poultry feeder monitoring
- Silo grain dispensing and weighing
- Tractor engine testing
- Field inspection drone sensor testing
- Wireless equipment for equipment monitoring
- Gate and fencing field security solutions

# HIGHLIGHT: Tractor PTO Torque Testing

## Customer Need / Challenge

A customer wants to measure the torque and speed of their tractor's PTO (power takeoff test) system. They want to ensure the tractor's PTO system is functioning properly, and they want to measure the torque being delivered to an implement.

## Interface Solution

Interface's solution is to use their T27 Bearingless Hollow Flange Style Rotary Torque Transducer to measure the tractor's torque and speed of their tractor's PTO system.

## Results

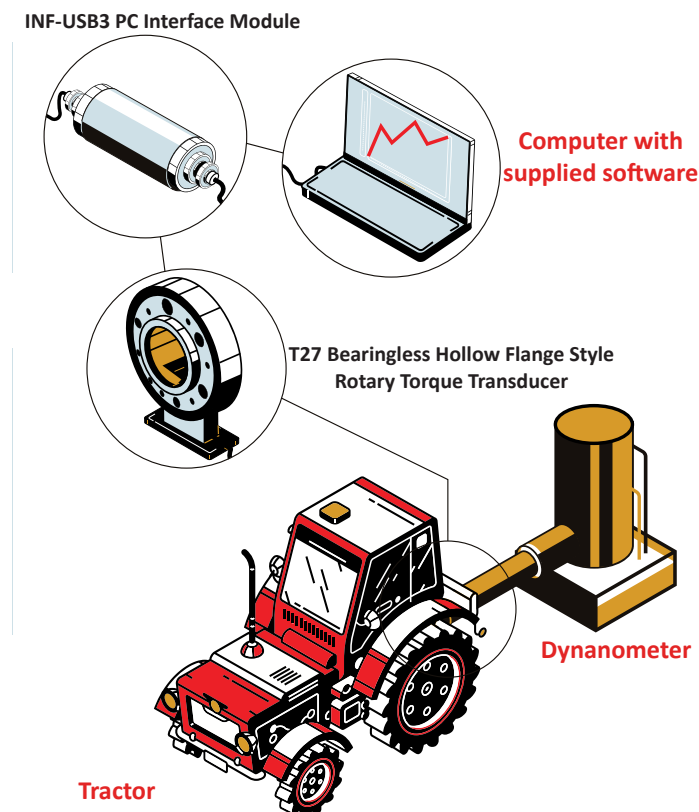
Interface's T27 Bearingless Hollow Flange Style Rotary Torque Transducer successfully and accurately measured the torque and speed of the tractor's PTO system.

## Materials

- Customer supplied dynamometer
- T27 Bearingless Hollow Flange Style Rotary Torque Transducer
- INF3-USB Universal Serial Bus Single Channel PC Interface Module
- Supplied configuration, display, graphing, and logging software
- Customer PC or Laptop

## How it Works

The T27 Bearingless Hollow Flange Style Rotary Torque Transducer is bolted to the tractors PTO shaft. A dynamometer is attached on the other end. The T27 Bearingless Hollow Flange Style Rotary Torque Transducer measures the tractor's torque and speed with high accurate results. With the INF3-USB PC Interface Module the customer was able to display, graph, and log the recorded torque and speed of the tractor's PTO system with the supplied INF3-USB software.





# Product Examples for Agriculture Solutions



**1200 Standard Precision  
LowProfile™ Load Cell**  
300 lbf to 100K lbf  
1.33 kN to 445 kN



**1100 Ultra Precision  
LowProfile™ Load Cell**  
200 lbf to 300K lbf  
1.33 kN to 890 kN



**2400 Standard Stainless Steel  
Low Capacity Load Cell**  
100 lbf to 5K lbf  
0.44 kN to 22 kN



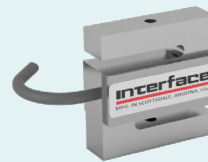
**3200 Precision Stainless Steel  
Load Cell**  
2.5 lbf to 100K lbf  
12.5 kN to 445 kN



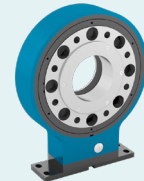
**A4200 and A4600  
WeighCheck™ Load Cells**  
2.5K lbf to 50K lbf  
11.1 kN to 222 kN



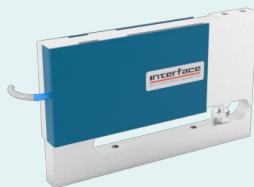
**SSB Sealed Beam Load Cell**  
50 lbf to 10K lbf  
222 N to 44.48 kN



**SMA Miniature S-Type Load Cell**  
15 lbf to 200 lbf  
60 N to 900 N



**T27 Bearingless Hollow Flange  
Style Rotary Torque Transducer**  
443 lbf-in to 8.85K lbf-in  
50 Nm to 1000 Nm



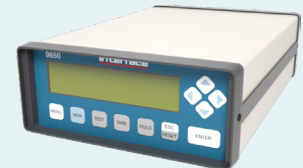
**SPI Low Capacity Platform Scale  
Load Cell**  
3 lbf to 15 lbf  
13.43 N to 66.72 N



**480 Bidirectional Weight  
Indicator**  
Powers up to 10 Load Cells  
Measurement Rate up to 40Hz



**T5 Standard Precision Pedestal  
Mount Shaft Style Rotary Torque  
Transducer**  
0.88 lbf-in to 8.85K lbf-in  
0.1 Nm to 1K Nm



**9850 Torque Transducer and  
Load Cell Indicator**  
7800 samples/sec/channel  
Works with torque transducers, load  
cells, encoders, LVDTs and speed pickups



**JB104SS 4-Channel Stainless  
Steel Junction Box**  
Two, three or four single cells  
Stainless steel, NEMA Type 4X enclosure



**1280 Programmable Weight  
Indicator and Controller**  
150+ built-in functions for programming  
USB, Ethernet TCP/IP, Wi-Fi Direct® and  
Bluetooth® ports



**WTSTL Wireless Tension Link  
Load Cell**  
11K lbf to 220.4K lbf  
5 mt to 100 mt



**INF-USB3 Universal Serial Bus  
Single Channel PC Interface  
Module**  
±3 mV/V, ±4.5 mV/V ±5 VDC, ±10 VDC  
4-20 mA, 12 ±8 mA and 5V TTL



**CSC and LCSC-OEM  
Inline Signal Conditioners**  
IP67 stainless steel enclosure (CSC Only)  
CE approved (CSC Only)  
1 kHz bandwidth



**SGA AC/DC Powered  
Signal Conditioner**  
User selectable analog output ±10V, ±5V,  
0-10V, 0-5V, 0-20mA, 4-20mA  
110 VAC, 220 VAC OR 18-24 VDC power



**BlueTooth® Telemetry System**  
Noise free resolution of 1 in 92000  
counts (16.5 bit) when used with a  
3mV/V sensor and 1 in 184,000 counts  
(17.5 bit) when used with a 6mV/V  
sensor



**WTS Wireless Telemetry System**  
17.7 lbf-in to 44.3K lbf-in  
2 Nm to 5K Nm

## Complete Agriculture Solutions Provider

Interface supplies a variety of force measurement products that are designed for advanced agricultural machines, equipment, safety gear and crop management. Our sensors and instrumentation solutions are designed to provide engineers with high-quality force and torque data to monitor and confirm the design and in-action processes all types of equipment.

Interface load cells, torque transducers, instrumentation and custom sensors are used in multitudes of products related to agriculture manufacturing, farm and field vehicles, inventory monitoring, equipment testing, livestock weighing and grain monitoring applications to name a few.

## Why is Interface Ideal for your Agricultural Applications?

Interface provides a range of sensor technologies that are utilized by manufacturers and testing engineers in the agriculture and food production markets, including our precision load cells, torque transducers, multi-axis sensors, miniature load cells, and popular tension links, load shackles, wireless instrumentation and more.

Interface's quality measurement solutions provide accurate data needed for all types of agriculture equipment used to push, pull, lift, contain, and move things ranging from seed to cattle. To perfect inventions and ensure safety, Interface sensors play a pivotal role.

Our products can be paired together to measure to ensure efficiency, sustainability, and proper production planning. Interface's products can regulate through harsh weather conditions such as humidity and unbearable temperatures while still maintaining a high testing and measurement performance.

In the agriculture industry, which consists of small farmers to conglomerates, there are a wide variety of machines, vehicles and supplies used to carry out all sorts of tasks used in the modern production of food and crops. These parts are often pushing, pulling, or storing large amounts of food, animals, or materials.

To ensure they hold up over time and can handle the necessary weight and capacity, force sensing is often used to verify use and test new designs. Sensors are often used in equipment to monitor and regulate in use. If these products aren't tested, confirmed, and monitored, not only can they break down and cost the user money and time, but they also pose a safety threat to operators and staff.

Just like any agriculture project, it begins in the design and planning. Let us know what you need to measure, in what capacity and any specialized durability or frequency requirements. Our team of application engineers will work with you to ensure you get exactly what you need. Contact us today and let's get started in defining an agriculture test and measurement solution for you.

# Agriculture Solutions

- Load Cells
- Torque Transducers
- Multi-Axis Sensors
- Tension Links
- Wireless Telemetry Solutions
- Weighcheck Systems
- S-Type Load Cells
- Load Button Load Cells
- Load Pins and Load Shackles
- Interface Mini™ Load Cells
- Data Acquisition Systems
- Signal Conditioners
- Instrumentation
- Digital Instrumentation

*If you know what you need and are ready to talk to our application engineers, email or call today!*

**To learn more  
about the Interface  
agriculture solutions  
provided call  
480-948-5555.**

**Interface is the world's trusted leader in technology, design and manufacturing of force measurement solutions. Our clients include a "who's who" of the aerospace, automotive and vehicle, medical device, energy, industrial manufacturing, test and measurement industries.**

Interface engineers around the world are empowered to create high-level tools and solutions that deliver consistent, high quality performance. These products include load cells, torque transducers, multi-axis sensors, wireless telemetry, instrumentation and calibration equipment.

Interface, Inc., was founded in 1968 and is a US-based, woman-owned technology manufacturing company headquartered in Scottsdale, Arizona.