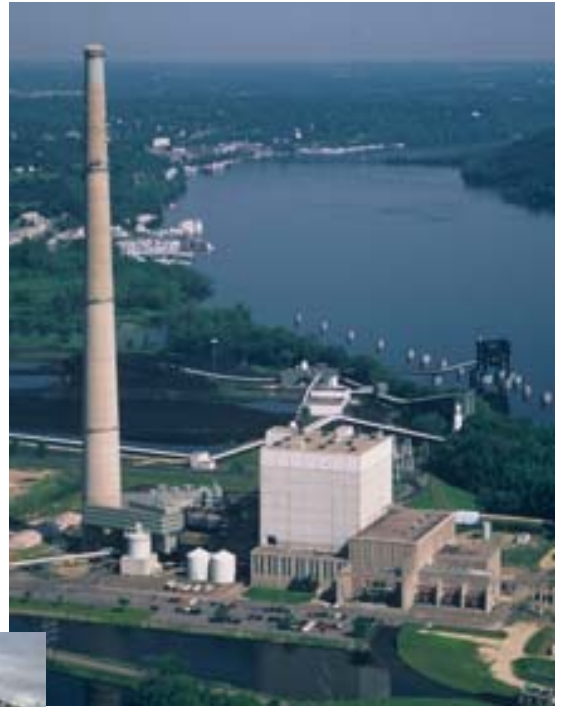


Bulk Pro[®]

SYSTEMS L.L.C.

Weighing, Feeding, Conveyor Switch and Sampling Brochure





Belt Scales	3
Integrators and Speed Sensor	5
Weigh Belt Feeders	6
Conveyor Protection Equipment	8
Monitoring Equipment	9
Point Level Detection	10
Sampling Systems	11



SINGLE IDLER BELT SCALE SYSTEMS



Bulk Pro Systems Model N-61 Single Idler Belt Scale System. Economical and easily installed belt scale system generally used for process control.



Bulk Pro Systems Model N-62 Single or Dual Idler Belt Scale System. Rugged, high accuracy belt scale system for in plant process control.

Typical Applications

- Mobile crushing plants
- Screening Plants
- Retrofits weigh belt feeder scale systems

- Primary Belt
- Tracks daily production totals
- Controls feed rates to various equipment
- Monitors stockpile inventory

Typical Industries

- Aggregates
- Asphalt
- Mining
- And Others

- Aggregates
- Cement
- Power
- Mining
- And Others

Maximum Belt Loading

150 lbs./ft

300 lbs./ft

Belt Width

18" to 48" (450mm to 1200mm)

18" to 72" (450mm to 1829mm)

Accuracy

± 1% or better

± 0.5% or better

Construction

Mild steel, painted (stainless options available)

Mild steel, painted (stainless options available)

Turn Down Ratio

4:1

4:1

Optional Equipment

Static calibration weights
Calibration chains
Communications boards

Static calibration weights
Calibration chains
Communications boards

MULTI-IDLER BELT SCALE SYSTEMS



Bulk Pro Systems Model N-63 Three or Four Idler Belt Scale System. Heavy duty, high speed and high accuracy belt scale system.

Bulk Pro Systems Model N-64 Four Idler Belt Scale System. Heavy duty, high speed and high accuracy belt scale system for critical processes.

Typical Applications

- Plant feed systems
- Reclaim systems
- Run of mine ore, coal or aggregates
- Used on fast and high belt loading conveyors

- Material load-outs by truck, barge ship or rail
- Monitor and track inventory levels
- Verification of incoming or outgoing products
- Used on fast and high belt loading conveyors

Typical Industries

- Aggregates
- Cement
- Power
- Mining
- And Others

- Aggregates
- Cement
- Power
- Mining
- And Others

Maximum Belt Loading

300 lbs./ft

300 lbs./ft

Belt Width

24" to 96" (610mm to 2438mm)

24" to 96" (610mm to 2438mm)

Accuracy

± 0.25% or better

± 0.125% or better

Construction

Mild steel, painted (stainless options available)

Mild steel, painted (stainless options available)

Turn Down Ratio

4:1

4:1

Optional Equipment

Static calibration weights
Calibration chains
Communications boards

Static calibration weights
Calibration chains
Communications boards

BELT SCALE INTEGRATOR AND SPEED SENSOR

The **6000 Series Microprocessor Based Integrator** is used to process the readings from the load cells and speed sensor. It integrates these two readings and gives you an instantaneous flow rate and totalization. It also takes the speed pulses from the digital speed sensor and gives you a belt speed. It displays this information on a 320 X 240 high resolution screen and relays this information to a control device via 4-20mA and pulse outputs. This integrator can take over basic control functions which were traditionally handled by higher level devices for example PID and batch control. The integrator is available in both a panel mount or field mount enclosure.



Features:

- All 6000 Series integrators use a common calibration platform.
- Digital electronics provide precise performance
- Auto Zero function
- Auto Span function
- Auto Zero Tracking
- Linearization capabilities
- Programmable digital inputs and outputs
- Selectable analog output (0-20mA or 4-20mA)
- Modular board design for easy troubleshooting
- Multi level password protection
- Self diagnostic software, electronically diagnoses potential problems with load cells, speed sensor, and electronics including CPU, memory and display.
- Dual language: English and Chinese



The **N60 Speed Sensor** operates in conjunction with any N series belt scale, providing a pulse signal to the integrator to calculate belt speed. The N60 is a direct coupled, brushless, digital pulse generator which give a series pulse. Each pulse from the speed sensor represents one unit of belt travel, the pulse frequency is proportional to the belt speed. It generally couples directly to the conveyor tail pulley or any other non-driven pulley with a minimum of 15-20 degrees of wrap. The series N-12C speed sensor comes standard with all N series belt scale systems.



WEIGH BELT FEEDERS



Bulk Pro Systems Model F-51 Weigh Belt Feeder System. Designed for lower feed rates and light bulk density materials.

Bulk Pro Systems utilizes three (3) platforms for its feeder designs. The F-51 weigh belt feeder is designed for lower capacities and lighter belt loadings and can be used on both food grade or industrial applications. The F-52 weigh belt feeder is a medium duty weigh belt feeder designed for industrial applications up to approximately 200 TPH. The F-53 weigh belt feeder is designed for your heavy duty industrial applications with flow rates up to and over 1000 TPH.

Material is fed into the weigh belt feeder via a feed hopper. This hopper is equipped with a manually adjustable profile gate which controls the bed depth on the feeder. A weighbridge assembly, mounted into the weigh belt feeder, measures the gravimetric force applied by the material travelling down the belt and converts this force into a mV signal which is proportional to the loading on the belt. A digital speed sensor continuously monitors the belt speed and the powerful electronics package of the 6000 series integrates these two signals to give you an instantaneous rate and totalized weight of the material that has passed through the feeder.

Bulk Pro Systems has extensive experience with weigh belt feeder design. All platforms can be modified to suit your applications. These weigh belt feeders are designed for continuous, reliable and uninterrupted service. The cantilevered design and sealed for life bearings make it virtually maintenance free. Our weigh belt feeders will help you automate your production process and increase your bottom line.

Typical Applications

- Food plant, additive feed systems
- Steel, bentonite addition in taconite
- Plastics, pellet feed or resin feed
- Minor ingredient feed systems

Typical Industries

- Food
- Chemicals
- Grain
- Minerals
- And Others

Maximum Belt Loading

2lb/ft to 20lb/ft (3.0kg/m to 29.8kg/m)

Belt Width

12" to 36" (305mm to 914mm)

Accuracy

± 0.25% to 1% of set rate at 2 sigma, based upon factory approved applications.

Construction

Mild steel, painted, stainless steel (optional), with or without covers.

Turn Down Ratio

10:1 or 20:1 application dependent

Optional Equipment

Static calibration weights
Hazardous Areas

WEIGH BELT FEEDERS



Bulk Pro Systems Model F-52 Weigh Belt Feeder. Medium to heavy duty weigh belt feeder.

Bulk Pro Systems Model F-53 Four Idler Belt Scale System. Heavy duty high capacity weigh belt feeder.



Typical Applications

- Plant reclaim systems
- Ethanol, crusher feed systems
- FGD, limestone feed systems
- Power, coal blending systems

- Power, primary crusher feed
- Power, coal blending systems
- Fractional sand blending systems
- Steel, ingredient feed systems

Typical Industries

- Power
- Mining
- Minerals
- Aggregates
- And Others

- Mining
- Power
- Minerals
- Steel
- And Others

Maximum Belt Loading

10lb/ft to 72lb/ft (15kg/m to 107kg/m)

17lb/ft to 300lb/ft (26kg/m to 447kg/m)

Belt Width

18" to 36" (457mm to 914mm)

18" to 84" (457mm to 25,603mm)

Accuracy

± 0.5% based upon factory approved applications.

± 0.5% based upon factory approved applications.

Construction

Mild steel, painted, stainless steel (optional), with or without covers.

Mild steel, painted, stainless steel (optional), with or without covers.

Turn Down Ratio

10:1 or 20:1 application dependent

10:1 or 20:1 application dependent

Optional Equipment

Static calibration weights, Hazardous Areas, AR or SS liners and many others.

Static calibration weights, Hazardous Areas, AR or SS liners and many others.

SAFETY STOP, BELT MISALIGNMENT AND BELT DAMAGE SWITCHES

The **Model SS-2 and SS-3 Safety Stop Switch** is designed to shutdown a conveyor system, in the event of an emergency or maintenance. When force is applied to the cable, the actuator arm rotates and locks in the alarm position. This activates two (2) SPDT micro switches and the manual lock out. The switch can be reset by pressing down on the arm and releasing the manual reset lever. Safety Stop switches are mounted on the walkway side or anywhere a person can access the moving parts of a conveyor.



The switches are connected by a safety cable which runs between the switch arms and can either be attached to the outer hole (10 lbs pull force) or the second inner hole (20 lbs pull force). The cables are secured by cable clamps after it is looped through the switch hole. The ends of the cable can either be a switch or a conveyor eye bolt secured with a clamp.

The **Model BM-2 and BM-3 Belt Misalignment Switch** is designed to prevent damage to belts and equipment due to a misalignment condition of the conveyor belt. They are normally located 1-6 feet from the head and tail pulley on both sides of the belt with the roller arm approximately 1 inch from the normal belt position. If the belt begins to wander, it makes contact with the roller causing it to spin. As more force is applied to the roller it will rotate away from the normal position and at 10°, it will actuate its alarm SPDT micro switch, so corrective action can be taken to prevent the arm from rotating to 20°, which will activate the shutdown micro switch.



The **Model BD-3** is designed to shutdown a conveyor system, in the event of belt damage. It warns supervisory personnel of impending belt failures due to rips, punctures, splice failures and sharp objects protruding through the belt carcass. Belt damage detectors are mounted in pairs positioned on both sides of the moving conveyor belt. The units are connected by two spans of aircraft cable. One end of the cable mounts permanently to a support bracket and the other connects to a spring loaded ball located on the detector. The aircraft cables loop underneath the belt from each side crossing at the midpoint. A belt problem is detected when an object or piece of damaged belt hangs below the belt surface and sweeps the away one or both cables. As the cable is detached, it pulls a spring loaded ball out of a socket, causing two micro switches to trip. One for annunciation to a PLC or alarm system and the other to shut down the conveyor belt lessening the potential damage and downtime that will be caused without this type of detection.



MONITORING EQUIPMENT



The Bulk Pro Systems **Model PL70-115 Motion Monitoring System** is used for accurate sensing of Under Speed, Over Speed and Zero Speed conditions on rotating shafts, pulleys or other rotating equipment within your plant.

The model PL70 incorporates either a direct coupled or proximity type speed pickup that receive their speed pulses from the moving piece of equipment you wish to monitor. These speed pick-ups wire directly into the PL70 Micro-processor based control which continuously monitors your equipment established by your user defined parameters programmed into the control.

This system will protect your valuable machinery from costly downtime, inform you of current operating conditions and provide you with an alarm if there is any variation from your user supplied operating parameters. It will help you increase production reduce downtime and provide you with vital information to the operation of your plant.

Microprocessor Based Control Features:

- Reference speed
- Alarm Set-Points: 0-160% of programmed speed
- Start-up Delay: 1-99 Seconds
- Alarm Delay: 0-99 Seconds from receipt of pulses or power on.
- Reset Mode: Power on or remote relay input.
- Begin Start-up Delay: From receipt of pulses or power on.
- Alarm Reset: Manual or Automatic reset.
- 4-20mA Proportional to Speed: Standard



The Bulk Pro Systems **Model PL60 Under Speed Switch** provides a low cost, reliable and simple means of monitoring the rotational velocity of a shaft or other pieces of rotating equipment in your plant. When the shaft or other piece of rotating equipment slows down past the user defined set-point, the PL60 sends an alarm output signal to the control system for notification or the motor starter to shut the equipment down. In conjunction with the alarm output the PL60 comes standard with an analog output which allows you to send a linear signal to you control system allowing you to display your real time rotational speed.

The PL60 Under Speed Switch is housed in a heavy duty, weatherproof, hermetically sealed, anti-corrosive die cast aluminum enclosure. It is designed to perform in the harshest environments.



POINT LEVEL DETECTION



Bulk Pro Systems Model PL Paddle Level Switch is an economical paddle level switch designed for point level detection in dry bulk materials. Incorporated into the design of the PL is a magnetic drive that has been proven by decades of use. A 1 rpm synchronous motor rotates the paddle which utilizes a magnetic drive. As the product in your application builds up to the paddle its movement becomes impeded and the resulting motor torque activates the output switches which stops the motor and gives you an alarm. A spring mechanism reactivates the motor and returns the switches to their normal state when the product moves away from the paddle and no longer impedes its movement.



Bulk Pro Systems Model TF Tuning Fork Level Switch is ideal for level control of powders and fine grained solids, especially those with low bulk densities. The TF incorporates a piezoelectric crystal that vibrates the fork at its natural frequency. When the fork comes in contact with material the vibration is dampened and the switch changes state. As the fork becomes free of material the switch changes back to its normal state. Featured in the TF is user selectable fail-safe operation of the contacts. This unit is not affected by vibration from conveying systems, motors or the movement of material. It can be mounted in any position and is available with factory built extensions for mounting on top of the storage vessel..



Bulk Pro Systems Model CL Capacitive Level Switch is ideal for level control of bulk materials, powders and liquids. The CL capacitive level switch does not have any moving parts. It will not jam, wear or break and requires no maintenance. State of the art sensing technology in the CL, using impulse RF admittance measurement combined with an active guard provides excellent level measurement and stability while not being sensitive to material build-up. This technology also provides immunity to external RF sources like walkie-talkies and cell phones as well as minimal interference with radio communication or other electronic systems.



Bulk Pro Systems Model DLS Diaphragm Level Switch is ideal for level control of bulk solids and powders. The DLS Diaphragm Level Switch has a unique, patented Magnetic Linkage that isolates the electrical compartment from the controlled product, reducing maintenance and improving sensitivity. The sealed switch compartment and sealed leads yield the upmost in reliable operation. A wide selection of diaphragms and switches are available with choices of flange or suspension mounting to fit your specific application. The dry level Ultra Mag™ level switch is extremely sensitive and very economical. The magnetic linkage makes this simple explosion proof diaphragm switch the most rugged and reliable level control for a variety of products.

POINT LEVEL DETECTION



The Bulk Pro Systems **Model SL29-115 Tilt Switch Control** and **Model SL20 Tilt Switch Probe** provide simple alarm output for both dry bulk materials or liquids when used with a float ball accessory.

The rugged **non-mercury** probe is suspended vertically over a material pile, bin or conveyor belt and as the material level rises to tilt the switch approximately 15° from vertical in any direction, an alarm output signal is activated. The control unit is designed with an adjustable time delay to prevent false trips from vibration, wind or accidental movement.

Various attachment accessories are available for the probe, such as wear paddles and float balls.

Features:

- **NON-MERCURY Switch**
- Heavy Duty Industrial Tilt Switch
- Simple Installation and Operation
- Solid State Electronics with Adjustable Time Delay to Prevent False Trips, 0-10 seconds
- Large green (“Normal”) and red (“Alarm”) indicating lights on front cover
- Mounting Hardware Included
- Optional Accessories available

The Bulk Pro Systems **Model SL23-8 AC Tilt Switch Probe** provide simple alarm output for both dry bulk materials or liquids when used with a float ball accessory. The rugged probe is suspended vertically over a material pile, bin or conveyor belt and as the material level rises to tilt the switch approximately 15° from vertical in any direction, it changes its state from normally closed to normally open.

This simple tilt switch is designed to wire directly to your PLC/DCS system. It eliminates the need for an additional control unit. A time delay can be programmed in the PLC to compensate for momentary movement of material or splashing.

Various attachment accessories are available for the probe, such as wear paddles and float balls.

Features:

- **MERCURY Switch**
- Heavy Duty Industrial Tilt Switch
- 115 VAC Power Supply
- No Control Box Required
- Wires Directly to PLC
- Simple Installation and Operation
- Mounting Hardware Included
- Optional Accessories available

Applications:

- High Level Control (Dry Bulk Materials or Liquids)
- Flow / No-Flow Detector
- Plugged Chute Detector

ENGINEERED SAMPLING SYSTEMS



SWEEP SAMPLING SYSTEM



AUGER SAMPLING SYSTEM

Sweep Sampling Systems are an economical and simple tool to get samples of material from a moving conveyor belt. They can be installed on either horizontal or inclined conveyors. There are thousands of sweep samplers installed worldwide. It can be used as stand alone system or it can also be used as a primary sampler for a multiple stage sampling system.

Operating Principle:

The sweep sampler rotates one complete cycle to get complete cross sectional sample from conveyor belt. The sample falls through a chute into the primary feeder which feeds the material into a crusher. The crusher crushes the sample to a required size without material loss and the moisture is kept within a certain range. The sample is then sent up another belt where secondary sampler takes a cut through crushed material. The final sample is collected in a water proof and dust-free container. The reject material is then sent back onto the conveyor belt via bucket elevator, screw feeder or belt conveyor.

Sampling Unit (SU):

The Bulk Pro Systems Sampling Unit (SU) is stand alone. The sampling module is pre-assembled to be hoisted onto a concrete base. The SU and Primary Sampler can be mounted in any section on the conveyor, which reduces installation costs. Optional equipment for the sampling module includes roof, side door, fans and heating equipment. For two belt conveyors, two primary samplers can be used with one sampling unit.

Auger Sampling Systems solve the problems associated with hand sampling whether you are sampling from stock piles, trucks, ships and rail cars.

Operating Principle:

Hydraulic controls allow primary sample-auger to cut into the coal pile to extract sample. After the coal hopper mounted on the top of the auger is full, the auger is lifted and moved to the receiving coal hopper and the samples are released. The coal sample is fed to crusher through primary feeder and after crushing, the coal is fed to the secondary feeder. During the conveying process, the coal is reduced by secondary sampler. The final sample is fed into sample collector and the remaining coal is sent to the reject system.

System Components:

Auger sampling system components include the following : hydraulic auger control equipment, coal collector, primary feeder, crusher, secondary feeder, second sweep sampler, sample collector, material rejection equipment, hydraulic control station and electrical controls. The hydraulic auger control equipment can be single point type or multiple point type.

CONTACT US



The Bulk Pro Systems product line is manufactured and based at this facility in Ham Lake a suburb of Minneapolis, MN.

About Us

Bulk Pro Systems will provide the highest quality, competitively priced, defect free bulk material handling products and services that meet our customer's requirements by the promised delivery date. Bulk Pro Systems provides a premier class of industrial in-motion weighing, level detection, safety / conveyor monitoring and sampling products utilized worldwide in a variety of industrial markets.

If you are interested in any of the products throughout this brochure please do not hesitate to contact us:

Bulk Pro Systems, LLC
13361 Aberdeen Street NE
Ham Lake, MN 55304
Ph: 763-767-0003
Fax: 763-767-3282

Visit us on the web at www.bulkprosystems.com