

K-Tron Feeders

Smart feeding solutions for dry bulk material and liquid process control



Feeding by Volume with K-Tron Modular Feeders

Every Feeder Starts as a Volumetric Feeder

In principle, volumetric feeding is the simplest, most economical feeding solution available. Bulk material is held in a hopper and constantly fed into a process per unit of time. A gravimetric feed rate may be inferred through a calibration process where a timed

sample is taken and weighed, and screw speed adjusted accordingly. Although there is no weight feedback to assure feeding accuracy over time, this may not be a concern for materials with consistent bulk density.



Bulk Solids Pump Feeder



Modular Single Screw Feeder

Choosing the Best Volumetric Feeder for Your Process

K-Tron offers a wide variety of single and twin screw volumetric feeders as well as Bulk Solids Pump™ feeders.

With exchangeable screw design choices, screw feeders can handle a wide range of applications involving prefeeding, feeding or batching of materials with consistent density, particle size and moisture content.

Single Screw Feeders

handle free-flowing materials such as pellets and powders.

Twin Screw Feeders

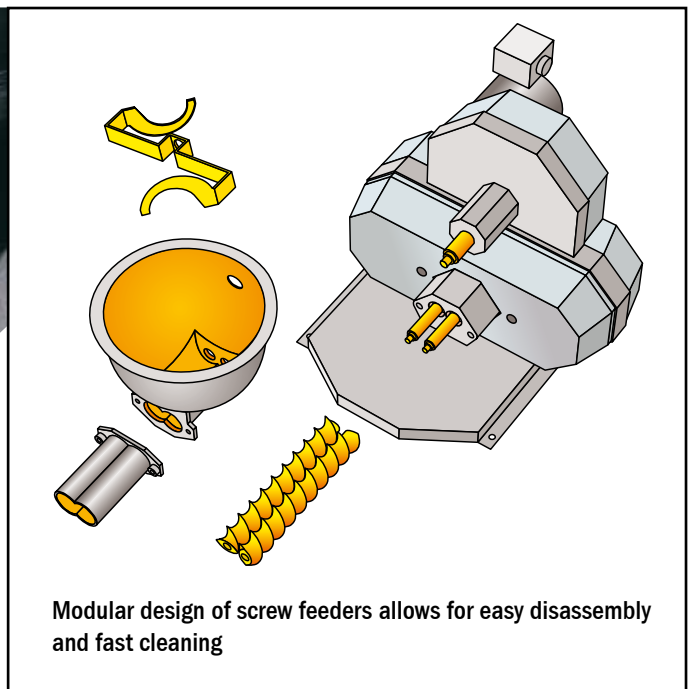
handle more difficult materials such as pigments, sticky, bridging or flooding powders, fiber and fiberglass.

Bulk Solids Pump Feeders

are designed for gentle and precise feeding of free flowing pellets, granules, flakes, powders and other friable products.



Modular Twin Screw Feeder



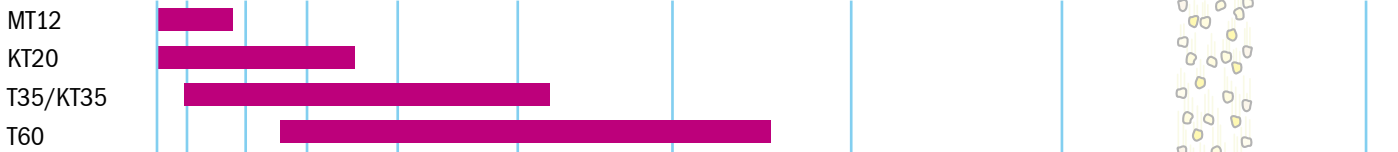
Modular design of screw feeders allows for easy disassembly and fast cleaning

Feed Rates to Meet a Wide Range of Applications

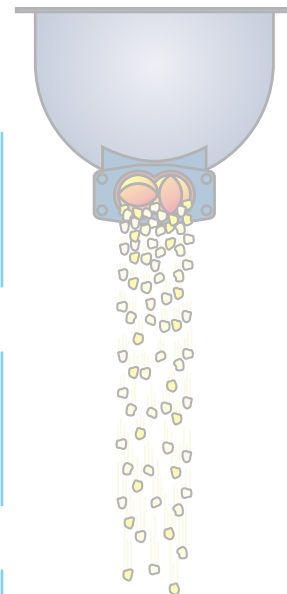
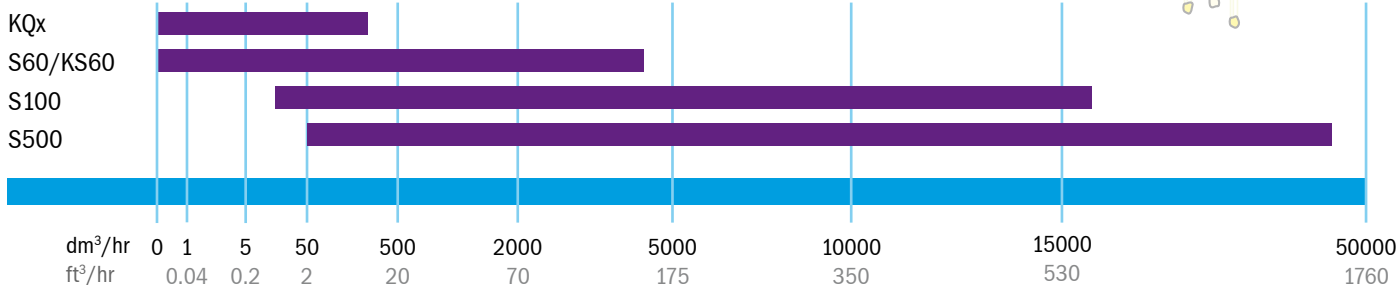
Bulk Solids Pump Feeders



Twin Screw Feeders



Single Screw Feeders



Feed Screw Designs to Handle a Diverse Range of Bulk Materials

Exchangeable Feed Screws in Single and Twin Screw Feeders

The table at right provides a rough classification of bulk material characteristics suitable to certain types of screw designs. Where flow characteristics are unknown or inconsistent, feeding tests are recommended.

Application

Examples Include:

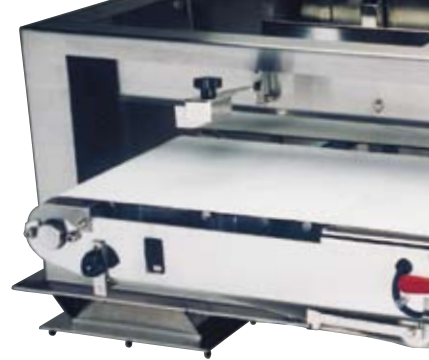
- Ti O₂
- Pigments
- Seasoning on potato chips
- Pellets for plastic extrusion
- Flocculating agents for wastewater
- Oxides for mill charging
- Vitamins in candy manufacture
- Salt in cheese production
- Additives for ice cream or baked goods

	Twin Con-cave-profile Screws	Twin Auger Screws	Twin Spiral Screws	Double Spiral Screws	Spiral Screw	Auger Screw	Auger Screw with larger tube
Characteristics							
very free flowing	1	1	1	1	1	1	1
free flowing	1	1	1	1	1	1	1
rel. free flowing	○	1	1	1	1	1	1
poor flowing	○	1	1	1	1	1	1
dusty	○	1	1	1	1	1	1
sticky	○	1	1	1	1	1	1
lumpy	○	1	1	1	1	1	1
greasy	○	1	1	1	1	1	1
damp	○	1	1	1	1	1	1
hygroscopic	○	1	1	1	1	1	1
bridging	○	1	1	1	1	1	1
ratholing	○	1	1	1	1	1	1
flooding	○	1	1	1	1	1	1
compacting	○	1	1	1	1	1	1
fluidizing	○	1	1	1	1	1	1
plasticizing	○	1	1	1	1	1	1
	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5

Legend: 1 Powder, 2 Pellets, 3 Granules, 4 Fibers, 5 Flakes, ○ requires agitator

A colored field in the table means: essentially suitable

Feeding by Weight with K-Tron Weighfeeders



Weigh Belt Feeder

Gravimetric Feeders Offer a Window into Your Process

In gravimetric feeding, dry bulk material or liquid is fed into a process at a constant weight per unit of time since weight is a variable that can be captured by a weighing module. Consistent control and complete monitoring are possible. In principle, gravimetric feeding combines monitoring of the feeding

process with a feedback loop that enables accurate material control.



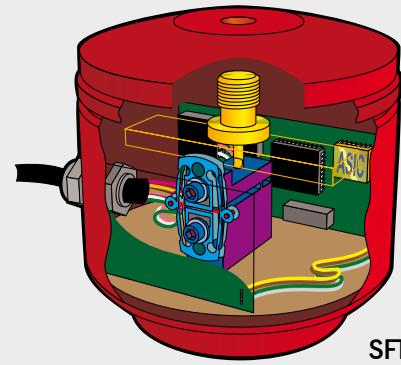
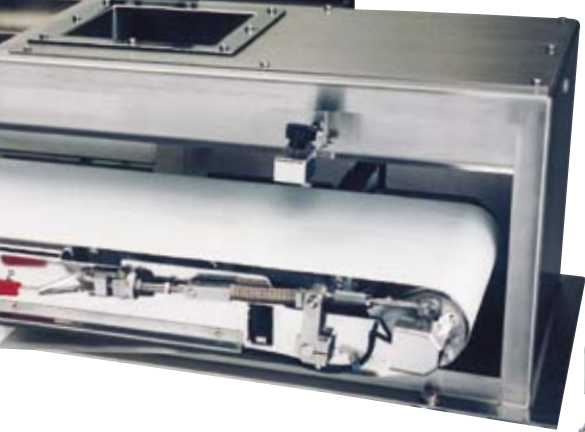
Choosing the Best Weighfeeder for Your Process

Feeding Solution	Modular loss-in-weight feeders	Compact feeders for low rate feeding	Smart weigh belt feeders with continuous online, auto tare
Models: Twin screw Single screw Vibratory Bulk Solids Pump Liquid	Models: Twin screw Single screw Vibratory Bulk Solids Pump Liquid	Models: Twin screw Single screw Vibratory Bulk Solids Pump Liquid	Model 300 Model 600

Applications	Gravimetric feeding for varying density, material handling automation, long term accuracy, repeatability and quality documentation, and where dust control is a concern	Feeding of minor ingredients with high accuracy and recipe repeatability	Gravimetric feeding for higher feed rates or where low headroom is a problem
--------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------	------------------------------------------------------------------------------



K-Tron Modular Loss-in-Weight Feeder with Vibratory Module



SFT II

Patented SFT Weighing Module Designed Exclusively for Feeders

K-Tron's vibrating wire weighing technology is based on the theory that the resonance frequency of an oscillating wire depends on the wire tension produced when a load is applied. Force, when derived from an applied weight, is transferred mechanically to the wire. The resonant frequency is measured to determine the weight. In K-Tron's patented Smart Force Transducer (SFT), the signal is directly converted into a digital weight signal by a built-in microprocessor. The signal is then communicated noise-free via RS 485 to the controller.

Each weighing module is linearized and temperature compensated during manufacture. The resulting information is burned into an on-board EEPROM located within the module to ensure very high weighing accuracy throughout the unit's entire operating range. Every SFT provides a true 4,000,000:1 weight resolution in 80 ms and comes with a 5 year warranty.

Liquid Loss-in-Weight

Smart Flow Meter with SFT weighing for high rate mass flow control

K4G Gravimetric Blending System for pellets and multi-stream ratio control

Models:
Compact
Standard

Model 275-A
Model 350

Models:
1-6 feed modules

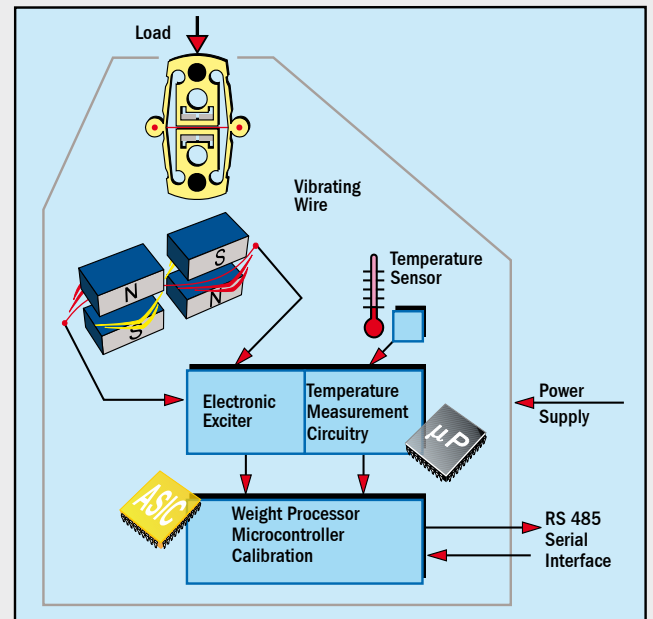
High accuracy gravimetric feeding of liquids

Metering, monitoring or totalization of bulk material flows, or as a feeder in high rate applications

Lower cost alternative for feeding pellets (single feeder). Compact, high accuracy multi-stream loss-in-weight feeding and ratio control (multi-feeder system).



MT12 Microfeeder for Microingredients



K-Tron Feeder Controls

Complete Solutions from Operator Interface to Integration into Your Process

No matter how simple or complex your feeder application may be, K-Tron has a control solution designed and priced to meet your needs.

Operator interface choices for controlling loss-in-weight, weigh belt and Smart Flow Meters include K-Tron's single feeder,

multi-feeder and multi-line controllers. Volumetric feeders and other PID devices may also be controlled from any of these devices.



K-Tron Single Unit (KSU-II) Control Interface

is the best choice for applications involving just one or a few feeders. The KSU-II is economical, simple to operate and provides the flexibility to control any K-Tron feeder or PID device, whether continuous, batch, gravimetric or volumetric.



K-Tron Smart Line (KSL) Control Interface

offers an economical operator interface for single-line, multi-feeder applications encompassing line monitoring, control and data communications for any combination of up to 8 K-Tron modular loss-in-weight, weigh belt, volumetric and Smart Flow Meters plus external pumps or refill devices.



K-Tron Smart Commander (KSC) Multi-Line Feeder Control Interface

is an advanced operator interface that uses an Industrial PC platform to simultaneously control any combination of up to 8 lines and 30 K-Tron modular loss-in-weight, weigh belt, volumetric or Smart Flowmeters plus external pumps or refill devices. Smart Commander runs on Microsoft Windows® and offers simple, graphical and intuitive operation.



Smart Commander Offers Touch Screen Operation

Typical Feeder Applications



SmartConnex™ : A Network of Thinking Feeders

SmartConnex more tightly integrates the basic components of the feeder system – mechanical design, control architecture and weighing technology – to greatly reduce cost of installation and daily operation, while making the system easier to use and maintain.

A key component is the K-Tron Control Module (KCM). It combines motor drive and control unit functions into a small box that mounts directly on the feeder to create what K-Tron calls the first “Thinking Feeder.” The KCM serves as the feeder’s “brain” and can control the feeder for batch and continuous processes.



Twin screw modular feeder in snack food extrusion process.



Modular volumetric and loss-in-weight feeders integrated with a gravimetric blending system and K-Tron receivers in a plastics extrusion process.



Smart Solutions for Material Handling

Since its creation in 1964, K-Tron has defined the leading edge of technology for material handling applications in the process industries. K-Tron designs, produces, sells and supports its equipment under the product names K-Tron Feeders, K-Tron PCS and K-Tron Colormax.

K-Tron Feeders

Volumetric and gravimetric feeding systems for plastics, foods, chemicals, detergents and pharmaceuticals

K-Tron PCS

Central and self-contained vacuum receivers and systems for conveying bulk materials in industrial processes

K-Tron Colormax

Auxiliary and blending equipment for the plastics industry

K-Tron Test Labs

Fully equipped testing facilities help in making the optimal equipment selection

Systems Engineering Support

Single station or multi-station systems designed to meet all your material handling needs

Worldwide Service Personnel

Trained service engineers located around the world to provide on-site solutions at your facility

Service Support

Twenty-four hour technical support to solve your problem any time, any day

Custom Service Programs

Start-up and preventive maintenance programs designed for your specific installation

Spare Parts

Quick delivery so you can safely limit your inventory to the most critical parts

Professional Training

The K-Tron Institute provides hands-on maintenance, mechanical and operator training for all of your K-Tron equipment, either on-site or at a K-Tron facility



Modular loss-in-weight feeders arranged over an extruder

Headquarters: K-Tron International, Inc., Pitman, NJ 08071-0888 USA

www.ktron.com

Manufacturing Plants:

K-Tron America, Inc.

Routes 55 & 553
P.O. Box 888
Pitman, NJ 08071-0888 USA
Tel: +1 (856) 589-0500
Fax: +1 (856) 589-8113
E-mail: ka@ktron.com

K-Tron (Switzerland) Ltd

Industrie Lenzhard
CH-5702 Niederlenz
Tel: +41 (0)62 885 71 71
Fax: +41 (0)62 885 71 80
E-mail: ks@ktron.com

Sales and Engineering:

Asia Pacific

K-Tron Asia Pte Ltd
10 Bukit Batok Crescent
#04-05 The Spire
Singapore 658079
Tel +65 6899 7255
Fax +65 6569 7600
E-mail: kap@ktron.com

Belgium

K-Tron Benelux b.v. *
Kontichsesteenweg 17
BE-2630 Aartselaar
Tel: +32 (0)3 870 96 40
Fax: +32 (0)3 870 96 41
E-mail: info@ktron.be

British Isles

K-Tron PCS Great Britain
46 Europa Business Park
Bird Hall Lane, Cheadle Heath
Stockport, SK3 0XA
United Kingdom
Tel +44 161 491 6225
Fax +44 161 491 6229
E-mail: kb@ktron.com

China

K-Tron China Ltd.
Shanghai Representative Office
Rm 907 Sinotrans Mansion
No.188 Fujian Road
CN-200001 Shanghai
Tel +86 21 6375-7925
Fax +86 21 6375-7930
E-mail: kcn@ktron.com

France

K-Tron France S.à.r.l.
56, boulevard de Courcerin
FR-77183 Croissy-Beaubourg
Tel +33 1 64 80 16 00
Fax +33 1 64 80 15 99
E-mail: kf@ktron.com

Germany

K-Tron Deutschland GmbH
Im Steinigen Graben 10
DE-63571 Gelnhausen
Tel +49 6051 9626 0
Fax +49 6051 9626 44
E-mail: kd@ktron.com

Japan

K-Tron Japan *
Verder Co., Ltd
5-8-8 Shinjuku, Shinjuku-ku
JP-Tokyo 160-0022
Tel +81 3 3351 9811
Fax +81 3 3351 9815
E-mail: info@ktron.co.jp

Netherlands

K-Tron Benelux b.v. *
Postbus 1
NL-3450 AA Vleuten
Utrechtseweg 4 A
NL-3451 GG Vleuten
Tel: +31 (0)30 677 9260
Fax: +31 (0)30 677 9269
E-mail: info@ktron.nl