



IT6000E *LOSS-IN-WEIGHT*

Controller For Differential Loss-In-Weight Scale

IT6000E LOSS IN WEIGHT is a controller for loss-in-weight weighing systems used for the discharging of bulk material in continuous processes for food, chemical products, building materials and other sectors of industry.

IT6000E LOSS IN WEIGHT connects to analog or digital scales of all types, including Ex-area applications.

IT6000E LOSS IN WEIGHT is suited for the continuous supply of product to

- Extruders
- Injection die casting machines
- Continuous mixers
- And other process equipment requiring constant material flow.

The raw material is discharged at constant flow rate from the weigh hopper via screw, vibratory or rotary feeder.

IT6000E LOSS IN WEIGHT controls the feeding device to adjust the actual feed rate to the preset target.

The automatic refilling of the weigh hopper is controlled via selectable setpoints and takes place without interrupting the feeding process.

The current process status is indicated on the clearly arranged color display.

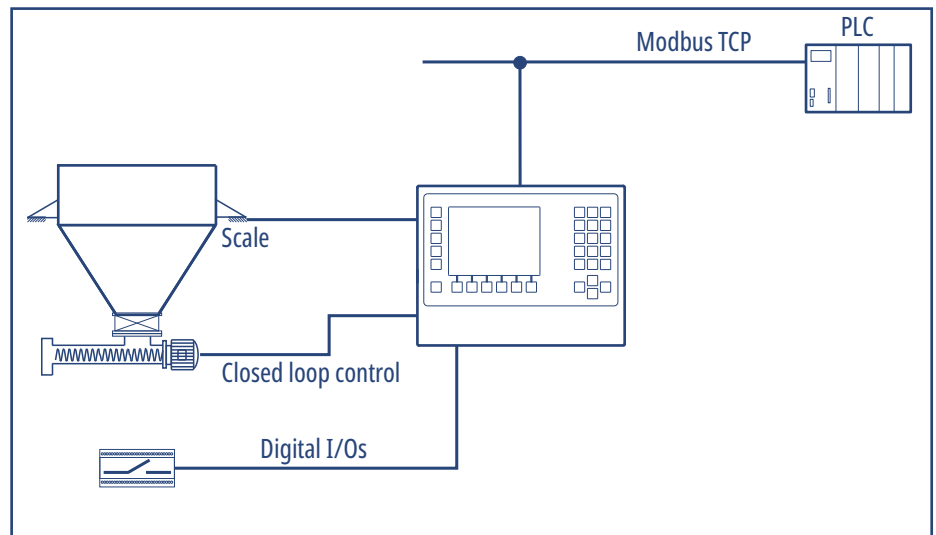
The most important features are:

- Raw material file for 15 products to store the material-related batching parameters
- Selection of product via display/keyboard or external inputs
- Gravimetric or volumetric mode selectable via keyboard or external input, also during running operation
- Resolution of feed rate display configurable from 0.1 kg/h (0.1 lbs/h) to 1 t/h for batch sizes from some 10 kg/h to 1,000 t/h and more.

Other features include:

- Options for dynamic adaptation of target feed rate via keyboard or analog input
- Powerful PID controller for tracking the actual flow with reference to target
- Controller parameters can be adjusted during running operation
- Clear operator prompting with display of total quantity, current feed rate, target and chosen product
- Graphic display of relevant process status on color screen.

Typical Setting:



Precise batching as result of

- Precise feed rate monitoring through high resolution of weight and millisecond time base
- Fast filters, self-adjusting to process
- PID controller with freely adjustable tuning constants
- Direct control of feeding device via analog output or serial RS485 / RS232 interface to connect a frequency inverter.

Simple and secure operation

- Operator prompting on high-contrast color TFT display
- Visualization of process status with color graph
- Numeric sealed membrane keyboard with multiple key assignment for alphanumeric entries or optional PC keyboard
- Clear text display of all process or error messages
- Operator prompting in English and German.

Simple integration

- Stand-alone operation or remotely controlled via external inputs/outputs
- Entry of target via keyboard, serial, analog input or frequency
- Control of feeding device through analog output 4–20 mA / 0–10 V, option to serially control frequency inverters of several makes
- Optional analog output 4–20 mA / 0–10 V to output the current feed rate.

Intelligent PID controller

Recording of up to 10 feed rate curves for volumetric operation with fill-level related correction functionality.

Security

- Power-fail-safe storage of data
- Password protection for all data
- Battery-backed real-time clock
- Plain text display of error messages.

Weighing electronics

- Integrated signal amplifier to connect up to 16 strain gauge load cells in 4- or 6-wire mode
- Fast signal processing (more than 200 updates per second)
- Internal resolution 524,000 d.

Modbus TCP

Connection to PLC or SCADA system via Modbus TCP.

Ethernet interface (option: WLAN)

Integrated Ethernet or WLAN interface, remote access to internal event log possible via SFTP.

Integrated USB interface (option)

To connect printer, PC keyboard for data input and administration or USB device for recording of event logs.

Electrical connections

110 (–15 %)–240 (+10 %) V AC;
50 / 60 Hz, option: 12–30 V DC,
power consumption max. 20 VA.

Operating temperature

–10 °C (+14 °F) to +40 °C (+104 °F),
max. 95 % relative humidity, non-condensing.

Accessories

- Log printer
- Dust and splash cover.

Ex2/22 version

For installation in Ex zones 2 and 22.

Typical batching cycle:

- Select product from material file via keyboard, external inputs or Modbus TCP;
- Enter target feed rate via keyboard or over Modbus TCP;
- Continuous discharging of material out of weigh hopper, capturing of weight difference per measuring interval and comparison with target feed rate;
- PID controller calculates updated actuating variable for the control of the feeding device to bring actual flow in line with target;
- Alternative operating mode 'volumetric' without closed loop control when product flow fluctuates widely, e.g. because of lumping;
- Optional dynamic adjustment of target flow via analog input or Modbus TCP, e.g. for feeding into an extruder;
- 'Freezing' of actuating variable for refilling of hopper when weight falls below hopper min. weight.

Construction:

Desk/wall version



- Stainless steel housing, IP69K, NEMA 4X
- Dimension W x H x D: 330 x 239 x 134 mm (13.0" x 9.4" x 5.3")

Panel-mount version



- Stainless steel housing, fascia plate protected to IP69K, NEMA 4X
- Dimension W x H x D: 285 x 224 x 69 mm (11.2" x 8.8" x 2.7")
- Cutout in panel: 268 x 207 mm (10.6" x 8.1")

Display / operation:

Status display

W1	Max 300 kg Min 2.0 kg	e=0.1 kg
W1		
149.0 kg		
Gross		149.0 kg
Total	0.1 t	Feed rate 2.98 t/h
Empty	Vol.	Over Refill
Product	1 Iron-II-sulfate	
Target rate	2.50 t/h	
Target qty.	12.5 t	
Feeding...		
Stop	Targ. rate	Targ. qty.

Display of all relevant process data while batching is in progress.

Tuning of PID controller

W1	Max 300 kg Min 2.0 kg	e=0.1 kg
98.7 kg		
Gross	98.7 kg	
Total	3.2 t	Feed rate 2.63 t/h
Empty	Vol.	Over Refill
P	I	D Outp.
0.240	0.425	0.275 26%
Feeding...		
+0.02	+0.002	–0.002 –0.02 Save Return

Tuning of PID constants during running operation.

Directives: 2014/30/EU, 2014/31/EU, 2014/32/EU, 2014/35/EU

Standards: EN 45501, OIML R 76-1, EN 61000-6-2, EN 61000-6-4, NAMUR NE21, EN 62368-1

CE EU Type-examination Certificate as non-automatic weighing instrument

NTEP approval as indicating element

ETL ETL certified in accordance with UL 62368-1 and CSA C22.2 No. 62368-1

FC EMI compliance with FCC Part 15

Canada Measurement Canada: Approval as indicating element

UKCA Type-examination Certificate as non-automatic weighing instrument