#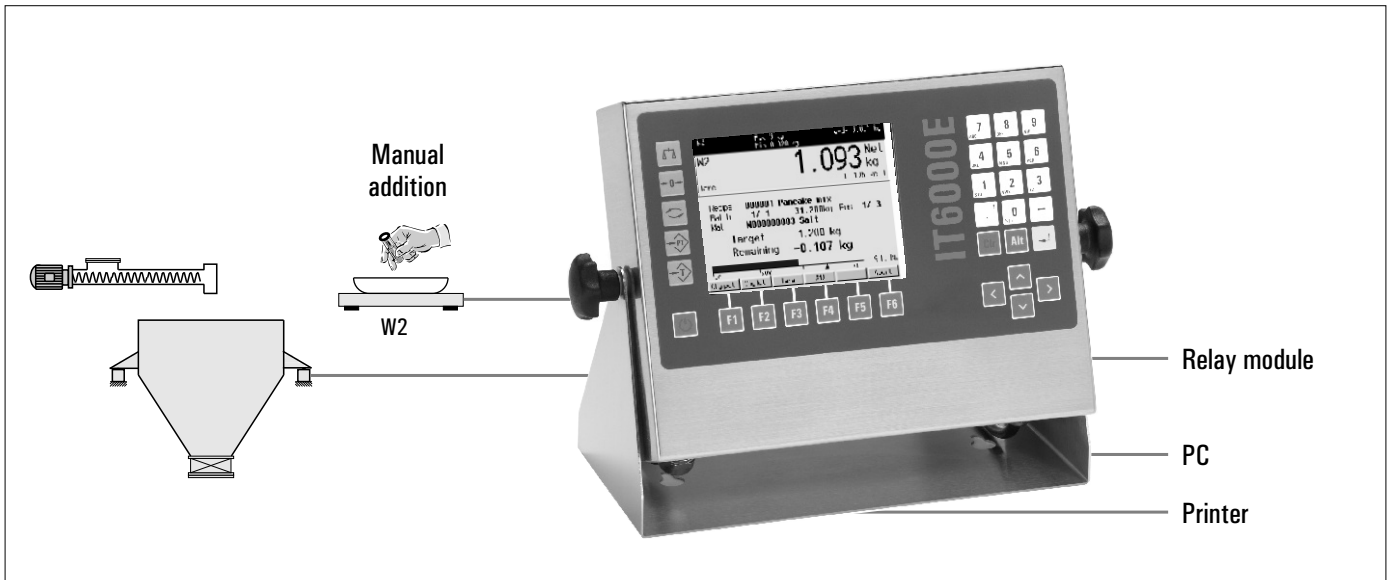 Batchweighing Controller with Onscreen Operation for Automatic and Manual Batching of Solid and Liquid Materials at 1 to 2 scales

Manual addition

W2

Relay module

PC

Printer

IT6000E *BATCH* is a batchweighing controller for automatic weighing of solid and liquid materials in the **chemical, pharmaceutical, food and other industries.**

The controller connects to loadcells or scales of all types and weight ranges, including Ex-area applications.

IT6000E *BATCH* is suitable for:
- Automatic multi-ingredient batchweighing in hoppers, mixers or tanks,
- Recipe batchweighing on floor and pit-mounted scales including control of manually added ingredients,
- Subtractive batchweighing (weighout) from hopper scales.

The system controls fast and dribble feed of **valves, screw feeders or similar for up to 31 materials.**

Batching sequences are recipe-controlled. Recipes contain functions for automatic or manual weighing, weight tolerance check, operator inputs and synchronization steps.

Production and processing procedures can also be included into an automatic cycle, simply, safely and fast.

The controller offers functionality to conform with ISO 9001 standards:

- Accurate fill control through fast signal processing, trend-sensing preact adjustment and weight tolerance control.
- **High operational security** through extensive monitoring functions and simple operation via onscreen menus.
- Operator prompting and permanent indication of status with **clearly structured menus** on **color screen** ensure fast and error-free operation and minimum training requirements.
- **Recording of all data** in a batch log, totals for raw material usage, production quantities and error reports.

The controller is available in two styles:
- **Compact stainless steel enclosure** (IP65) for desk-top or wall mounting, or
- **Panel-mount housing.**

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IT6000E *BATCH* is designed for:

- **Semi-automatic operation,**
  as stand-alone batchweighing controller with its own recipe and raw material database, or
- **Automatic operation,**
  linked to a process control system or PLC with database maintenance and overall process control.

Sequence and operation are configurable and can be adapted to the requirements of a specific application.

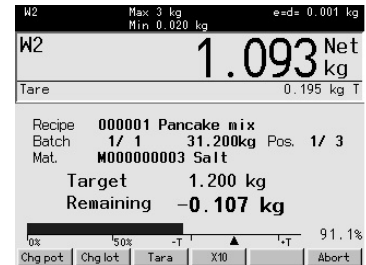**Typical sequence in semi-automatic operation:**

To start a batch, batch size, number of batches and, possibly, application-specific data are keyboard entered. The sequence is started via the keyboard or from an external signal.
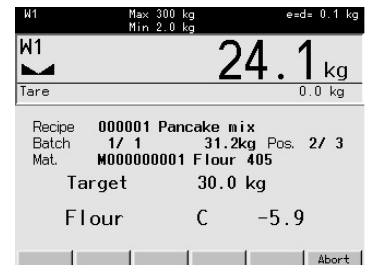
A batch log is printed at the end of each batch.

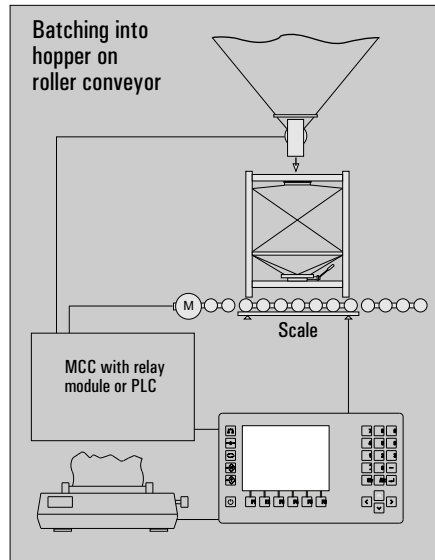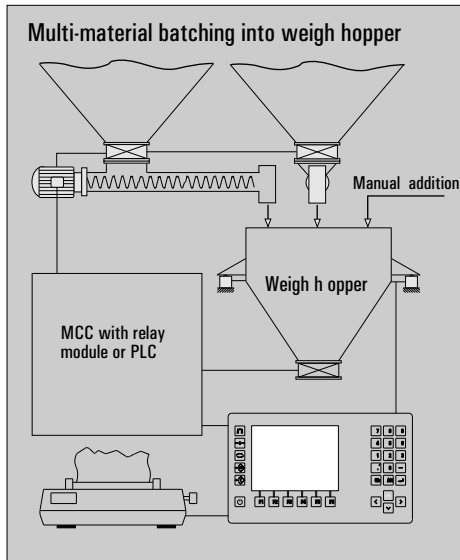Error messages are displayed in clear text and printed out on a printer (if connected).


```
W1              Max 300 kg      e=d= 0.1 kg
                Min 2.0 kg
W1
                          0.0 kg
Tare                            0.0 kg
Manual Mode
Operator no    1234 John Q. Public
Recipe no      000001 Pancake mix
Target              31.200kg
No of Batches   1
       Batch    1    Start ?
                                    Exit
```

Entry of target values


```
W2              Max 3 kg        e=d= 0.001 kg
                Min 0.020 kg
W2
                        1.093 Net kg
Tare                          0.195 kg T
Recipe    000001 Pancake mix
Batch     1/ 1      31.200kg  Pos. 1/ 3
Mat.      M000000003 Salt
   Target         1.200 kg
   Remaining     -0.107 kg
0%       50%      -T       ▲    +T    91.1%
Chg pot │ Chg lot │ Tara │ X10 │      Abort
```

Manual weighing with bargraph display


```
W1              Max 300 kg      e=d= 0.1 kg
                Min 2.0 kg
W1
                         24.1 kg
Tare                            0.0 kg
Recipe    000001 Pancake mix
Batch     1/ 1      31.2kg  Pos. 2/ 3
Mat.      M000000001 Flour 405
   Target         30.0 kg
   Flour          C      -5.9
                                    Abort
```

Automatic batching

Multi-material batching into weigh hopper

Manual addition

Weigh hopper

MCC with relay module or PLC

Batching into hopper on roller conveyor

M
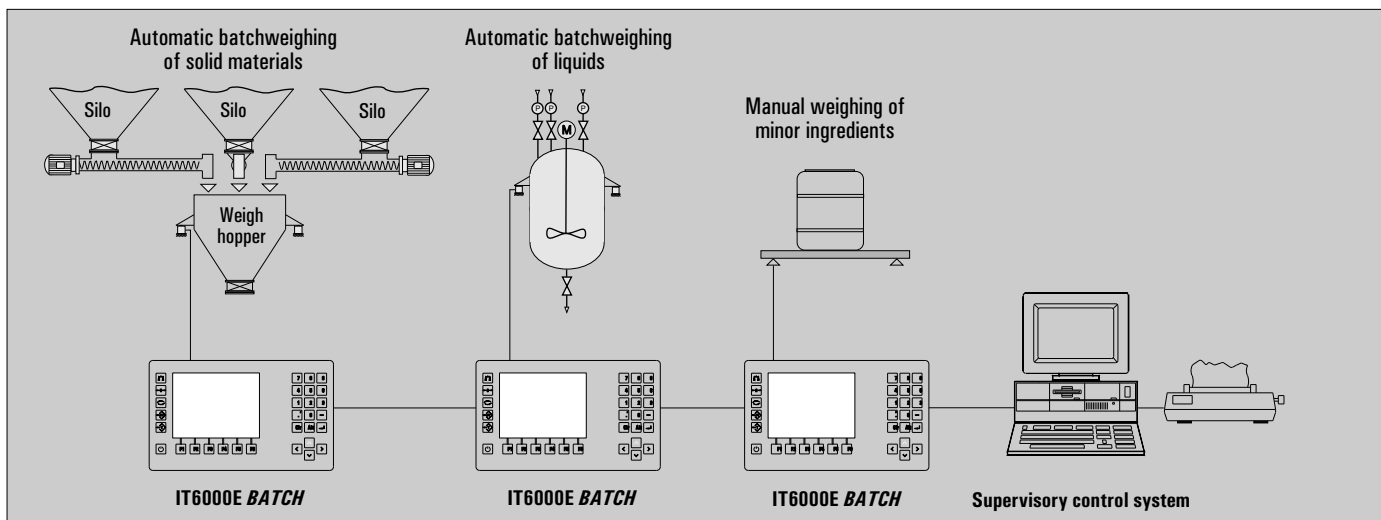
Scale

MCC with relay module or PLC

Typical sequence in automatic operation:

To start a batch, recipe-No., batch size, No. of batches and the start command are transferred to the IT6000E *BATCH* over Ethernet.

During a batching sequence it is possible to continuously output status information and actual weight over the Ethernet interface. On completion of a batch, batch information is transferred to the host system.

Automatic operation is typically used when a number of batchweighers equipped with IT6000E *BATCH* controllers are employed.


```
W1              Max 300 kg      e=d= 0.1 kg
                Min 2.0 kg
W1
                          0.0 kg
Tare                            0.0 kg
M000000004 Ammonium bicarbonate  AmBiCar
M000000008 Butter                Butter
M000000006 Caramel               Caramel
M000000001 Flour 405             Flour
M000000003 Salt                  Salt
M000000011 Sodium bicarbonate    Sodium
M000000005 Vanilla               Vanilla
M000000010 Water                 Water
M000000009 Whole milk powder     Whole m
                                    Exit
```

Table of raw materials

Automatic batchweighing of solid materials

Silo   Silo   Silo

Weigh hopper

Automatic batchweighing of liquids

M

Manual weighing of minor ingredients

IT6000E *BATCH*   **IT6000E *BATCH***   **IT6000E *BATCH***   **Supervisory control system**
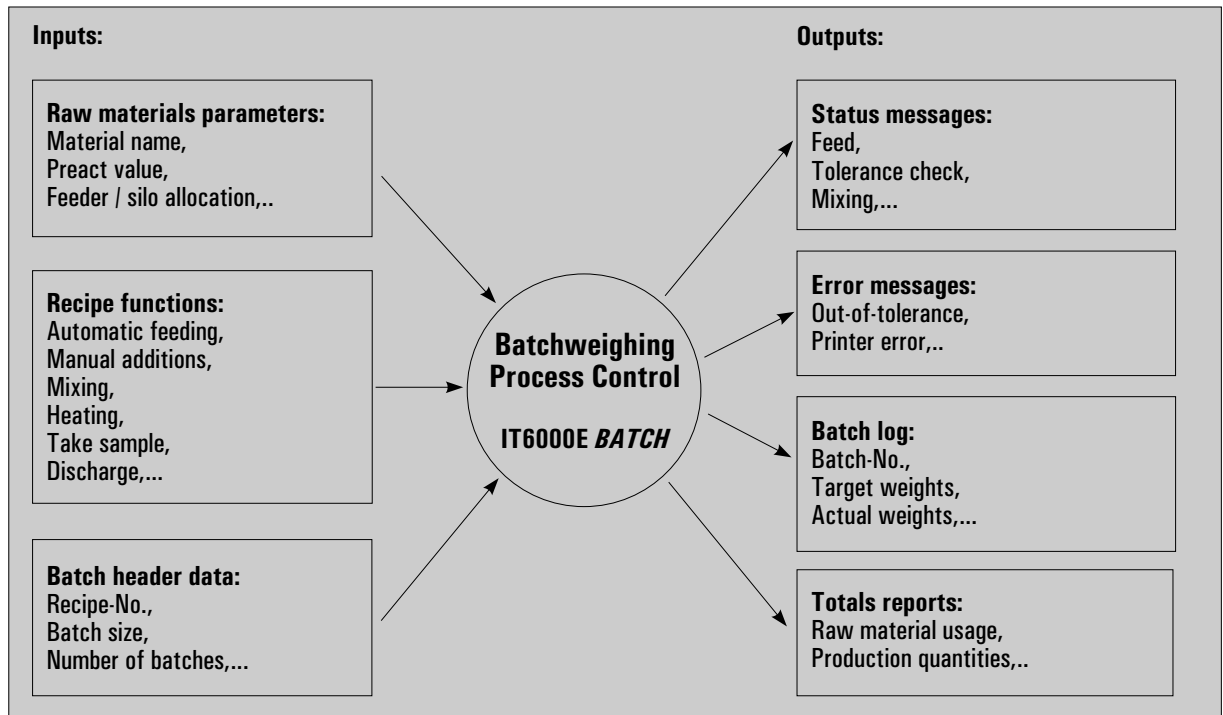
Recipes:
- **Recipe database** with max. 100 recipes and max. 2000 recipe lines
- **Capturing of production quantities** for each recipe.
- **Each recipe line may have one of these functions:**
  - Automatic fill control
  - Manual additions
  - Subtractive weighing
  - Discharging
  - Zero check
  - Tare check
  - Confirm fixed value
  - Read data word
  - Write data word
  - Text prompts with operator acknowledgement
  - Synchronization step
  - Time preset
  - Control of mixer, heater, feeder, etc.

Raw materials:
- **Automatic batching** of up to 31 raw materials.
- **Manual batchweighing** of a further 69 materials.
- **Parameter entry** of material-No., name, preact value, etc. for each raw material.
- **Feeder assignment** (eg to silos) is.configurable.
- **Capturing of raw material usage** for each material.

Inputs:

Raw materials parameters:
Material name,
Preact value,
Feeder / silo allocation,..

Recipe functions:
Automatic feeding,
Manual additions,
Mixing,
Heating,
Take sample,
Discharge,...

Batch header data:
Recipe-No.,
Batch size,
Number of batches,...

Batchweighing Process Control

IT6000E *BATCH*

Outputs:

Status messages:
Feed,
Tolerance check,
Mixing,...

Error messages:
Out-of-tolerance,
Printer error,..

Batch log:
Batch-No.,
Target weights,
Actual weights,...

Totals reports:
Raw material usage,
Production quantities,..

Typical batchweighing sequence for a mixer mounted on loadcells:
- Zero check
- Automatic feeding of major materials with tolerance check and preact adjustment
- Manual addition of minor materials with tolerance check
- Mixing
- Wait for request signal
- Discharging
- Transfer and/or print batch log.

Typical example of a recipe batching sequence for a container on a roller-bed scale:
- Zero check
- Move container onto scale
- Tare control
- Automatic feeding of materials with tolerance check and preact adjustment
- Move container off scale.

Feed control:

- Fast and dribble feed with countdown display and tolerance check.
- Manual feeding with display of remaining target weight and bargraph display, with capturing of batch-Nos.
- Manual filling with change of item and horizontal weighing
- Automatic recalculation of target weights based on desired batch size.
- Automatic trend-sensing preact adjustment (selectable).
- Automatic top-up feed (jog) in the event of minus tolerance (selectable).
- Material flow check with violation alarm (selectable).
- Automatic intermediate discharge when batch size is larger than weighing range (selectable).
- Capturing of operator-No.

Operation:

- Operator is guided on a high-contrast color TFT display. Numeric keyboard with multiple key assignment for the entry of alphanumeric data, tactile acid-resistant membrane keyboard and soft keys or optional full-size PC keyboard.
- Sequence and operation can be individually configured. This eliminates unnecessary operator steps.
- Input, printout and transfer of application-specific data, eg order-No. or batch-No.
- Operator prompting in English, French or German, other languages on request.

Reporting:

- Batch log
- Error messages
- Files, totals, parameters
- Logging on printer and/or to file (internal memory or external USB device).

Files:

- Recipe file with 2000 function entries (recipe lines)
- Raw material file with 100 entries
- Parameter file
- Personnel file with 50 entries.

Simple integration:

- Stand-alone or remote-controlled operation possible - material parameters, recipes, etc. can be keyboard entered or downloaded.
- Accept, Start, Interrupt functions are possible via external switches.

Weighing electronics:

- Integrated signal amplifier for connection of up to 16 strain gauge loadcells each in 4- or 6- wire mode
- Calibration as single or multiple-range and as single or multi-interval scale
- Fast signal processing (50 - 800 updates / sec.
- Weights and Measures approved resolution of 6,000d with a maximum preload of 80%, 524,000d internal resolution
- Second scale interface as option possible via serial interface.

Operating temperature:

–10°C to +40°C, max. 95% relative humidity, non-condensing.

Security:

- Data are retained in the event of power loss.
- Power fail recovery, continuation of program possible after power failure
- Password protection for all data
- Battery-backed realtime clock
- Display, printout and transfer of all error messages is possible.

Ethernet interface (Option: WLAN):

Connection to PC network via integrated Ethernet interface with configurable IP address, for data transmission to printer/PC (option), for communication with the host system or remote diagnosis over Internet.

Serial interfaces:

- For printer (option)
- RS232, 20mA CL, RS422, RS485, selectable, protocol/baudrate configurable.

Integrated USB interface (Option):

for connection of PC keyboard, scanner, printer or USB stick.

Parallel interfaces:

- 4 internal opto-isolated inputs / outputs (24V) or
- External relay modules to connect to MCCs / PLC

Electrical connections:

115 (–15%) – 240 (+10%) VAC; 50/60 Hz, option: 12–30VDC, power consumption max. 20 VA.

Accessories:

- Support stand for floor mounting
- Relay module with secure separation of inputs and outputs (24V, 3A).

Construction:

Desk/wall version

- Stainless steel housing, IP65
- for desk-top or wall-mount installation or with optional column for floor mounting
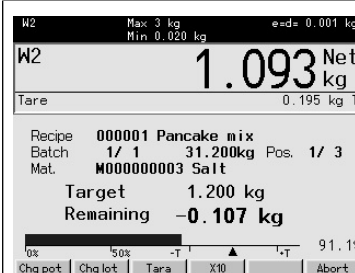- Dimension WxHxD: 330x239x134mm

Panel-mount version

- Stainless steel housing fascia plate protected to IP65
- Panel-mount installation
- Dimension WxHxD: 285x224x69mm
- Cutout in panel: 268x207mm

Display / operation:

Bargraph display

| W2 | Max 3 kg | e=d= 0.001 kg |
| | Min 0.020 kg | |

W2 **1.093** Net kg

Tare 0.195 kg T

Recipe	000001 Pancake mix
Batch	1/ 1 31.200kg Pos. 1/ 3
Mat.	M000000003 Salt

Target 1.200 kg

Remaining −0.107 kg

0% 50% −T ▲ +T 91.1%

| Chg pot | Chg lot | Tara | X10 | Abort |

Manual weighing
with bargraph display

Raw material table

| W1 | Max 300 kg | e=d= 0.1 kg |
| | Min 2.0 kg | |

W1 **0.0** kg

Tare 0.0 kg

M000000004 Ammonium bicarbonate	AmBiCar
M000000008 Butter	Butter
M000000006 Caramel	Caramel
M000000001 Flour 405	Flour
M000000003 Salt	Salt
M000000011 Sodium bicarbonate	Sodium
M000000005 Vanilla	Vanilla
M000000010 Water	Water
M000000009 Whole milk powder	Whole n

| | | | | | Exit |

Maintenance of
of raw material file