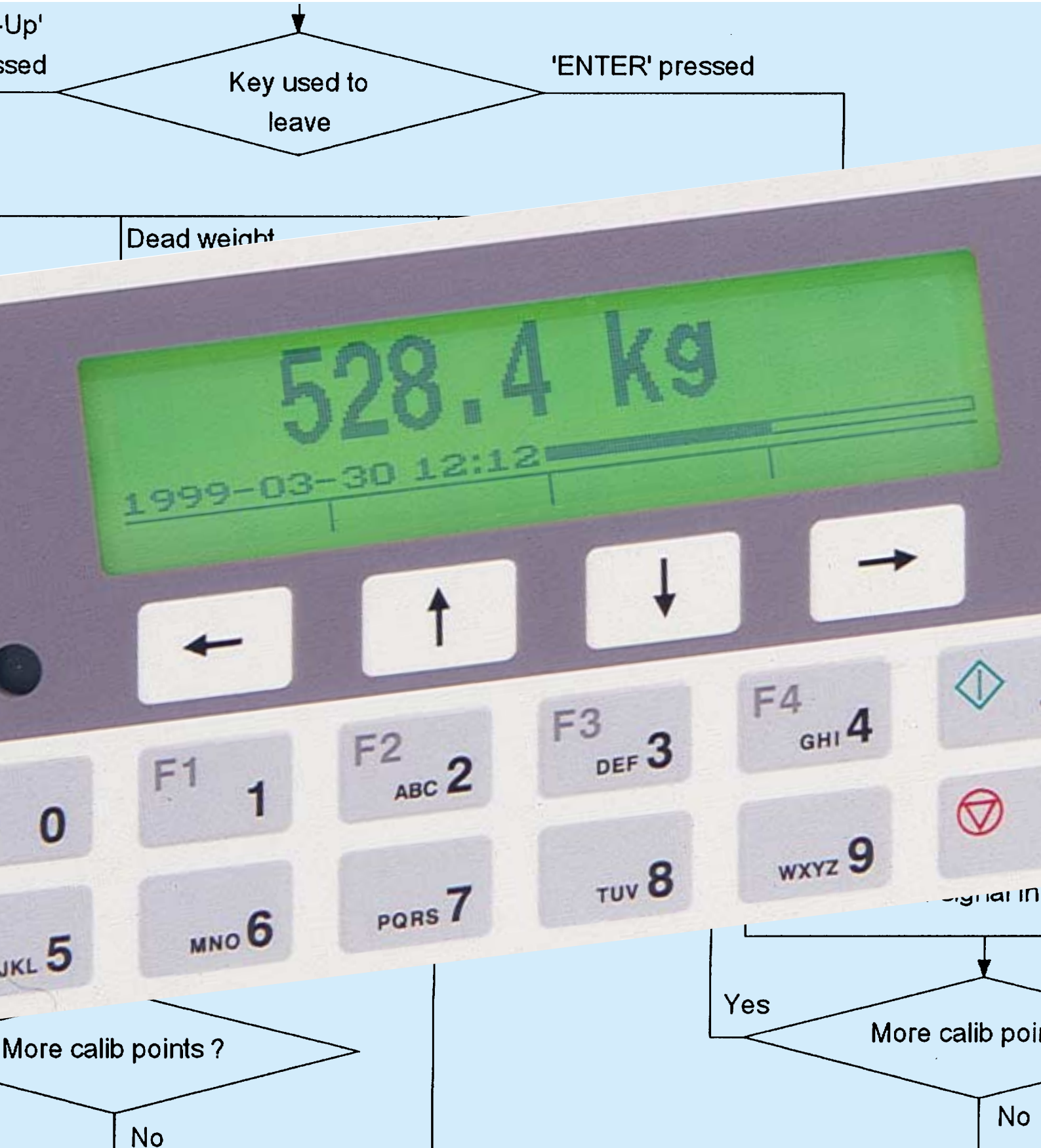
Thermo Nobel

High performance
Weight Processor TAD 3



... for very advanced process control

Weight Processor TAD 3
- is very accurate - also at fast processes
- has great batching capacity
- has excellent connectivity and operator´s interface.

Processor TAD 3 is intended for converting signals from strain gauge based load cells and force transducers into suitable indication or for PC or PLC based systems. As options, flow measurement and recipe controlled batching facilities are available.
The high accuracy and very fast transmission rates make TAD 3 perfectly suited to advanced process control.

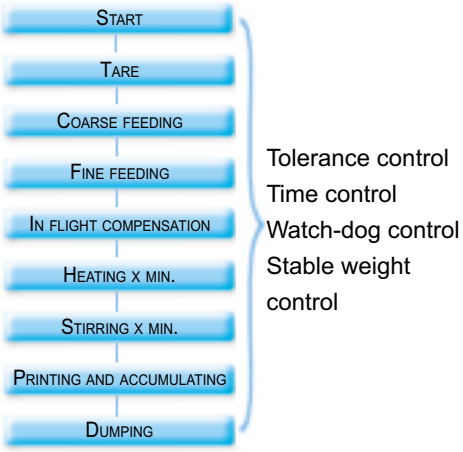
More than 5500 TAD-type indicators have been supplied, with the result that there is now a ”TAD library” with over 250 special programmes, covering most industrial applications.

Small box - great batching possibilities

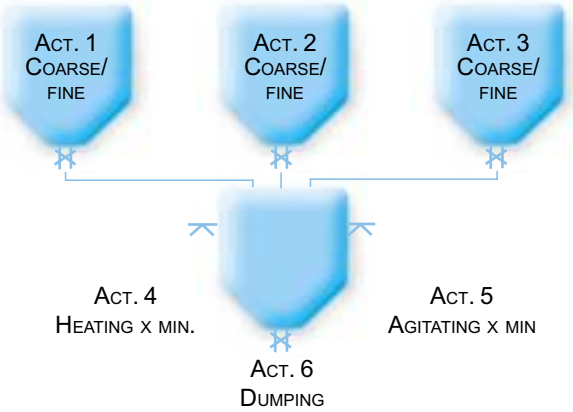
The batching version of processor TAD 3 makes it possible to perform batching of up to six components in coarse and finefeeding phases. The batching is carried out over separate, digital I/O units. The I/O units can also be used for non-batching functions like stirring, heating, dumping etc.

Before the start, the recipe is easily entered and a number of batches and batch sizes are chosen.
An acknowledge check is performed as well as a check of the availability of sufficient material.

EXAMPLE
A typical batch sequence can be:



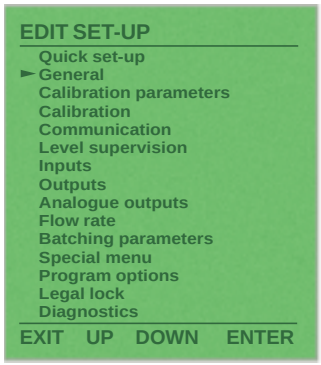
EXAMPLE
Activity diagram

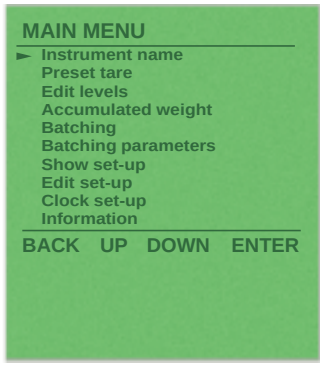


Each name of the batched materials and the name of the finished mix as well as accumulated weights can be printed alpha-numerically.

Simple set-up and entering of recipe

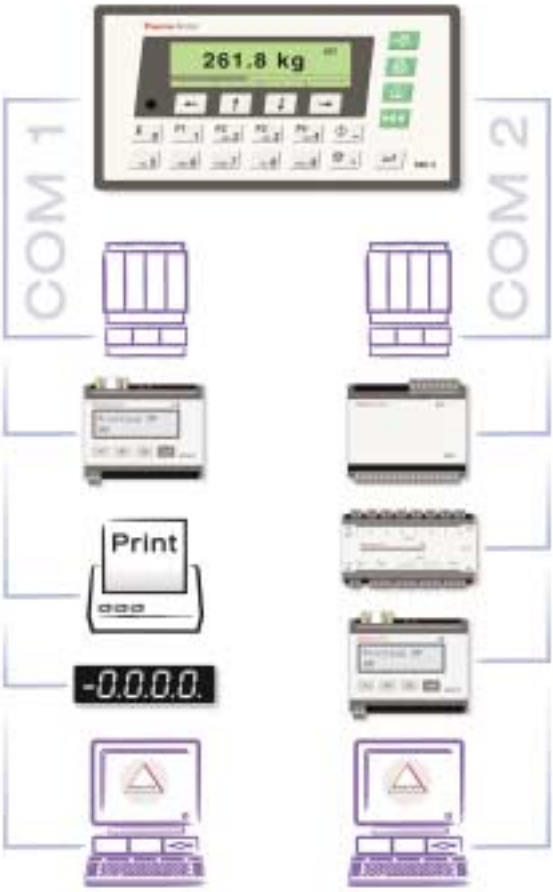
A menu program leads the operator through all phases of the process. He can enter alpha-numerical information in his own language on the graphic display.





Another way to perform set-up and calibration is to use the deltaCOM program on a PC, please see separate data sheet. The basic version of deltaCOM is included in TAD 3 delivery.

Excellent connectivity



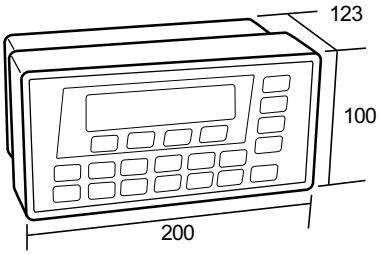
Level supervision

In the standard version eight separate levels can be set with selected hystereses added, meaning that the switch level can be set differently for increasing and decreasing load.

Calibration

Data sheet calibration is a particularly valuable feature with the TAD 3. By entering the values from the load cells' data sheets (these can always be obtained from Thermo Nobel) it is possible to calibrate a complete weighing station before it is installed. Other calibration methods which may be used are dead weight, table and shunt calibration.

Technical Data



Mechanical data

Panel cut-out	92 x 186 mm, r <5 mm
Depth behind panel	135 mm. Add 50 mm if D-sub connector is used for RS-232.
Panel thickness	Up to 10 mm.
Protection	IP 65 at the front end by panel mounting

Transducer input

Transducers	Up to 8 units, 350 ohms each.
Excitation	9.5 VDC with 1 or 2 transducers connected, 7.5 VDC with 4 transducers connected.
Signal input	Bipolar up to 3.3 mV/V.
Sense input	1.5-10 VDC.
A/D conversion	13 800 000 counts. Patented own design.

Conversion

Temperature influence:

Gain	<± 1.5 ppm/°C of shown weight.
Zero	<± 0.01 µV/°C
Noise	<0.15 µV p-p during 60 s.
Linearity	<± 20 ppm of range.
Repeatability	<± 10 ppm of range.
Graduation	1, 2, 5, with 0 to 3 decimals and 10, 20 or 50.
Conversion	Ratiometrically integrating, 0.5 to 50 conversions per second.
Resolution	10.000/1.000.000 divisions (fastest/slowest conversion rate at input signal: 1.0 mV/V).
Filter	Adaptive digital filter
Step response	3 – 11 updates
Linearisation	Can be calibrated in 6 points.

Digital inputs

Number of inputs	2 pcs 24 VDC
Input current	6 mA at 24 V in

Relay outputs

Number of relays	2 pcs
Relay load	Max 1 A, 30V AC or DC

Serial communication, Com 1

Used for Modbus RTU communication, fieldbus communication (via GATE 3), remote display or printer.

Interface	RS-485/RS-422 or RS-232 with D-sub.
Baud rate	Up to 115.2 kbaud.

Serial communication, Com 2

Used for Modbus RTU communication, optional I/O units, fieldbus communication (via GATE 3), remote display or printer.

Interface	RS-485/RS-422.
Baud rate	Up to 460.8 kbaud.

Calibration

Methods	Data sheet, Shunt, Table or Dead weight.

Calendar clock	Internal real time clock with backup battery.

Power supply

Supply voltage	24 VDC ±20 %, 8 W.

Environmental

Temperature range	
Rated performance	–10 to +50 °C
Storage	–25 to +85 °C.
CE conformity	EMC, industrial for process control.

Front panel

Display	Graphic LCD with backlighting.
Keys	10 keys for digit and character entry, – sign, decimal point, ENTER, 4 function-keys,Tare, Gross/Net, Print, Zero.

Options

Separate units, rail mounted according to DIN 46 277 or DIN EN 50022 (35 mm), connected to a serial communication port of TAD 3. The units should be supplied by 24VDC.

Analogue output unit ANA 3

One or two units can be connected to TAD 3.

Analogue output

Bipolar current or voltage

Voltage output	0 - 10 VDC or ± 10VDC over 500 ohms or more.
Current output	0 - 20 mA, ± 20 mA, 4 - 20 mA, -12 – 20 mA in 500 ohms or less in 500 ohms or less
Resolution	16 bits (65000 counts)
Linearity	< 0.01 % of range
Zero drift	< 0.005 % of range/ºC
Gain drift	< 0.003 % of actual value/ºC
Update rate	As in TAD 3, however max 25 Hz. Can be selected slower.
Mechanical size	75 x 100 x 110 mm.

Digital I/O unit DIO 3 R

One or two units can be connected to TAD 3.

Inputs and outputs

Inputs	8 per unit. 24 VDC nom. at 13 mA input current. Positive logic.
Outputs	8 closing relays, 250 VAC or 125 VDC, max 1A

Serial communication port

Baud rate	Max. 115.2 kbaud.
Application	Modbus RTU, remote display or printer.
Mechanical size	75 x 150 x 110 mm.

Gateway GATE 3.

For fieldbus communication. See separate data sheet.

Thermo Nobel

Thermo Nobel AB
Box 423, SE-691 27, Karlskoga, Sweden
Phone +46 586 63000
Fax +46 586 63099
info.se@thermonobel.com
www.thermonobel.com

010 EN 0108 Printed by Tollarpstryck in Tollarp, Sweden 2001