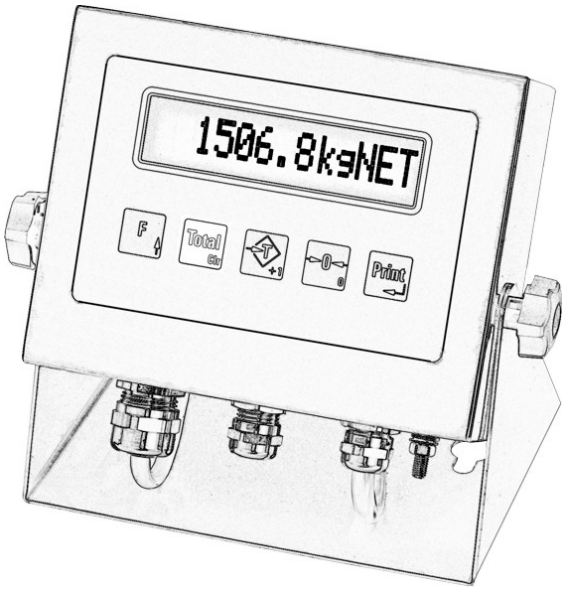
SysTec Systemtechnik und Industrieautomation GmbH

Operation Manual

IT1000



Industrial Weighing Terminal

July 2018

ST.2309.0603

Rev. 16

Operating Instructions IT1000

Date: July 25, 2018

File: IT1000_BAE.DOCX

Program Version: as of 2.18

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

3162737

Conforms to UL STD 62368-1
Certified to CAN/CSA STD C22.2 No. 62368-1

Published By:

Please Note:

While every precaution has been taken in the preparation of this manual, SysTec GmbH assumes no responsibility for errors or omissions. Neither is any liability assumed for damages resulting from the use of the information contained herein.

The publisher is grateful for any information and/or advice that may contribute to correct errors or omissions in following editions.

Contents

1 Introduction

IT1000 is a universal weighing terminal with additional functions for data logging, data transmission, parts counting, filling and setpoint control.

1.1 Safety Symbols Used In This Manual

Safety relevant information is shown with corresponding symbols as follows:

W A R N I N G
Failure to observe this precaution could result in serious injuries or fatal accidents. Please make absolutely sure that these precautions are observed in order to ensure safe operation of the equipment.

CAUTION
Failure to observe this precaution could result in damage to or destruction of the equipment or bodily harm! Please make absolutely sure that these precautions are observed in order to ensure safe operation of the equipment.

Note: This indicates an advice for the designated use of the equipment and/or additional information to avoid inappropriate handling.

1.2 Safety Advice

W A R N I N G
Disconnect all power to this instrument before opening the housing! Risk of electrical shock!

W A R N I N G
Exercise utmost care when making checks, tests and adjustments that can actuate movable parts such as feeding devices, gates, flaps, conveyors, etc. Make absolutely sure that nobody is within reach of movable parts.
Failure to observe this precaution could result in bodily injury!

W A R N I N G
This unit must not be operated in a potentially explosive atmosphere!
It is the sole responsibility of the user to classify the area of installation and make sure that absolutely no potentially explosive atmosphere can be present at any time!

CAUTION

- **If this device is used in an automatic or manual filling cycle, all users must provide a hard wired emergency stop circuit outside the device circuitry. Failure to observe this precaution could result in bodily injury!**

CAUTION

- **When this unit is included as a component part of a system, the resulting system design must be reviewed by qualified personnel who are familiar with the construction and operation of all individual components in the system and the potential hazards involved. Failure to observe this precaution could result in bodily injury!**

CAUTION

- **This unit must be installed, serviced, and operated in strict compliance with all locally applicable safety regulations and the rules for the prevention of accidents!**

CAUTION

- **The power supply unit provides SELV voltages in accordance with EN 60950. Make sure that any peripheral device connected to the weighing terminal containing its own power supply also uses SELV voltages!**

CAUTION

- **Input voltage of the instrument must comply with local mains supply!**

CAUTION

- **This module and its associated equipment must be installed, adjusted and maintained by qualified personnel only!**

CAUTION

- **If the line cord with connector is used as the means to separate the instrument from the mains, the wall outlet must be installed close to the instrument and must be easily accessible! If a permanently connected mains cable is used, an easily accessible separator must be included in the supply circuit!**

Compliance with the following safety instruction is mandatory for UL approved units:

CAUTION

- **For power supply of the IT1000A-DC use LPS and/or NEC class 2 power supply units only.**

Notes:

- The unit does not have a mains switch and is operational immediately after connection to the mains supply! (Not in battery Version)
- It must be installed, serviced, and operated in strict compliance with all locally applicable safety regulations and the rules for the prevention of accidents!
- This module and its associated equipment must be installed, adjusted and maintained by qualified personnel only!
- Only permit qualified personnel to operate this instrument! Disconnect all power to this instrument before cleaning and servicing!
- Keep this manual in a safe place for future reference!

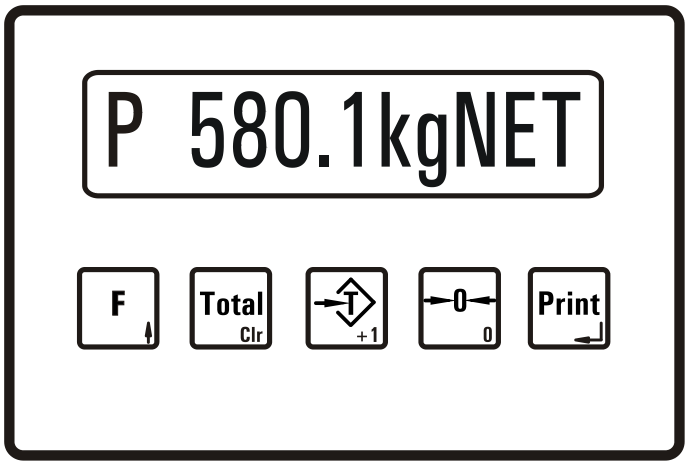
1.3 Safety Advice For IT1000 Battery Version

- For charging the PA-LRC121 battery pack only use a power supply unit connected to the IT1000-ACCU compliant to the following specification: output voltage 12 V DC (–15 %) to 24 V DC (+10 %), P min. 25 W;
- Do not expose the battery pack to heat or fire, do not incinerate. Battery packs heated up by charging must not be placed into storage;
- Do not deform, short-circuit, disassemble or modify the battery pack;
- Do not submerse the battery pack in water, do not expose it to moisture;
- Handle the battery pack with care, do not throw or expose to shock;
- Do not cut, squeeze or tear the cables of the battery pack;
- Do not carry or store the battery pack together with other objects that have sharp edges or are electrically conductive;
- Avoid contact between (+) terminal and (—) terminal of the battery pack or to any metallic parts.

> ⚠ **W A R N I N G**
> Failure to observe these safety advices may cause overheating, fire or explosion!

- The rechargeable battery is not considered a hazardous material according to transport regulation UN3481 (battery installed in equipment).
  This results in simplified transport regulations for air freight according to IATA UN3480 PI 965 section II and for road transport according to special provision ADR 188 (battery installed in equipment).
- In Germany the battery can be disposed of according to the Common Recycling System For Batteries (GRS).

2 Display And Keyboard



Left-most character on display				
1,2,3	=	Weighing range		
P	=	Printing		
ø	=	Scale in zero range (±0,2 d)		
~	=	Motion		
Indication of weight			**3 right-most characters on display**	
580.1kg	=	Measured weight	**NET**	= Display of net weight, scale is tared
-------	=	Overload		

Key		Description
F	**F key**	Power off, show tare weight, enter target value, charge state battery pack
	↑ key	Back to previous program step
Total Clr	**Total key**	Show totals
	Clr key	Delete parameters (Clr)
+1	**Tare key**	Autotare scale, or clear tare when scale is tared
	+1 key	Choose menu item or parameter (+1)
0	**Zero key**	Set gross weight to zero (only within zero setting range)
	0 key	Append '0' in parameter entry (0)
Print	**Print key**	Power on, printing (Print)
	↵ key	Confirm parameter entry and proceed to next program step (Enter)

2.1 Operator Prompting

Prompts or entries that apply only under certain conditions are shown in an extra frame. The condition is shown in bold face in the upper left hand corner of the frame:

PC not ready:

PC Not Ready !	Error message: PC is not ready for data transmission. Display only in case of error.

↵ key and ↑ key

In all program steps, unless otherwise specified, the **↵ key** leads to the next step. Pressing the **↑ key** leads to the previous step.

2.1.1 Entry Of Numbers

Sp.1 9999999	Entry of numbers (without decimal point)
	Press repeatedly until desired number appears
	Press to append a zero, entry is shifted to the left by one digit
	Press to proceed to next digit
	Confirm entry

Example: Entry of the value 123:

Sp.1 ____100	Display shows the stored value, e.g. '100'
	Press, display shows '1'
	Press, display shows '10'
	Press twice, display shows '12'
	Press, display shows '120' display shows
	Press three times, display shows '123'
	Confirm entry

Please note: To delete a digit press **Clr key**.

2.1.2 Enable / Disable Functions

	`Printer?  0`	Display shows '0,' function is disabled
	`Printer?  1`	Press to **en**able function. Display shows '1,' function is enabled.
	`Printer?  0`	Press to **dis**able function. Display shows '0,' function is disabled.

2.2 Weighing Functions / Charge State Of Battery Pack

The first step in all operating modes is the indication of the actual weight value. In this step scale functions are activated and displayed.

	`1  11.9kg`	Display of gross weight; For multi-range scales the number of the currently selected range (e.g. 1) is shown.
	`ø  0kg`	Set gross weight to zero (only within zero setting range), the zero range symbol ø is shown.
	`0kgNET`	Autotare: Press **Tare key** to autotare scale.
	`11.9kg`	Press **Tare key** once more to clear tare and return to display of gross weight.
	`11.9kgT`	Press **F key** to display tare weight (operating modes BASIC and COUNT only). Display returns to initial step after 3 sec.
	`X10  119.03`	If **F key** is pressed once more while tare weight is displayed, the actual weight is shown with tenfold resolution (x10 function). Press F key again to return to initial step or display returns to initial step automatically after 5 sec.
	`Batt(%):  95`	If **F key** is pressed once more the current charge state of the optional battery pack is displayed. After 5 sec the display returns to the initial step (only for operating mode 'Basic').

2.3 Power Up

Only for battery version:

Switch terminal on

Batt(%): 96

Current charge state of battery pack

If charge state is below permissible value:

Batt. low

Terminal is switched off automatically.

When the terminal is switched on, the power up messages are displayed and the program proceeds to its initial step.

Version 1.00

Program version

15.03.04

Date

15:06

Time

Basic

Selected operating mode

11.9kg

Initial step of operating sequence (in the operating modes CHECK and FILL first the target value must be entered).

2.4 Power Off (Only for battery version)

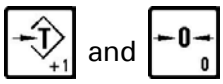
Only for battery version:

Press **F -key** and hold down for approx. 3 sec to switch the terminal off.

3 Supervisor Mode (Entry Of Date And Time)

Note: Unless a real-time clock module is installed, date and time must be entered after every power up!

Date and time are entered in the Supervisor Mode.

11.9kg	Basic step of sequence
	Press simultaneously to reset terminal (warm start).
	Press during start of program to access Supervisor Mode.
Supervisor	
Day 99	Enter day
Month 99	Enter month
Year 99	Enter Year
Hour 99	Enter hour
Min. 99	Enter minute
Cons.-No.9999	Enter start value of consecutive-No. for printout (is increased automatically for totalizing)
Sp.1 9999999	Enter setpoint 1 (function depends on selected operating mode)
Sp.2 9999999	Enter setpoint 2 (function depends on selected operating mode)

Operating mode 'FILL' selected:

Preact Corr.1	1	Preact correction enabled
	0	Preact correction disabled

Printer? 1	Enable / disable printer
Host? 0	Enable / disable data transmission
Totals? 0	Operation with/without calculation of totals: 1 = With totals (normal operation) 0 = Without totals, Print and Total keys are disabled

Check setting of W&M relevant parameters:

W&M Setup 0	
	Press +1 to enable function
W&M Setup 1	
	
W&M Setup ok	See chapter 'W&M Info'

When the Supervisor Mode is exited, the entered or changed parameters are stored.

Saving...	Exit Supervisor Mode, store changes and return to normal operation.

3.1 W&M Info

W&M Info	Check setting of W&M relevant parameters.

In this group the setting of parameters can be checked that are relevant for W&M approved scales. Any deviation is indicated.

E: MoWin<>0.5	Motion Window
E: MoCnt < 7	Motion Count
E: AZR > 0.5	Auto Zero Range
E: PBZR > 4%	Push Button Zero
E: Over > 9D	Overload Blanking
W: PUZ Off	Power Up Zero ***)**

(E = Error, (W = Warning)

***)** If setting for Power Up Zero is unequal ±2 % or ±10 %, only a warning is shown, because depending on the specific application also the setting 'Off' maybe acceptable, e.g. for hopper scales.

W&M Setup ok	If all settings comply with W&M regulations a corresponding message is displayed.

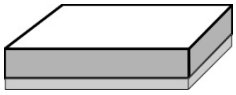
4 Operating Modes

4.1 BASIC (Weigh & Print)

In operating mode 'BASIC' the weighing terminal works as a simple scale with weigh & print function.

With the **F key**, tare weight and weight with tenfold resolution (x10 function) can be displayed, see notes at the end of this chapter.

Weighing with container



0.2kg	
ø 0.0kg	Set scale to zero
8.0kg	Place container on scale
0.0kgNET	Tare scale (NET indicates net mode)
13.0kgNET	Put first item into container
P 13.0kgNET	Printing / data transmission of weight

If TareKey = G/N (Service mode in group 'General')

21.0kg	Set scale back to gross weight

Weigh further items

0.0kgNET	Tare scale
13.2kgNET	Put second item into container
P 13.0kgNET	Printing / data transmission of weight

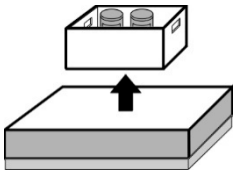
Weigh next item

Calculate totals and terminate weighing cycle

Total Clr	`Total 4`	Totalizing: Show number of items
Total Clr	`358.6kg*`	Show total net weight.

Clear memory or return

Print	`Delete...`	Print totals and clear memory
or:		
Total Clr	`13.2kgNET`	Return to basic step without clearing totals



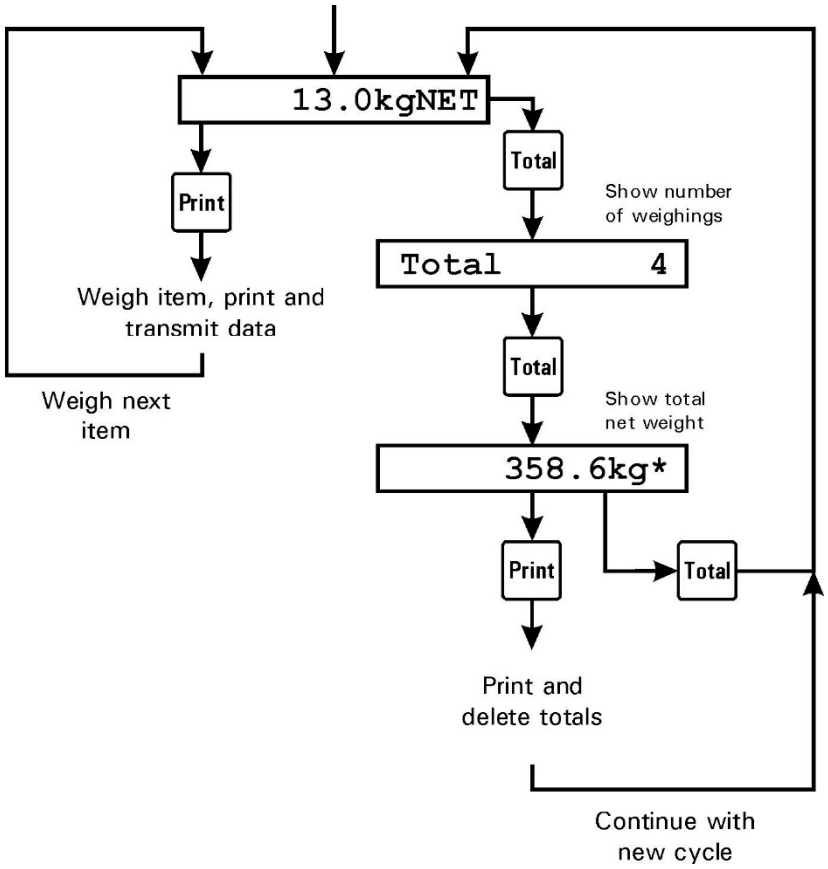
`-34.0kgNET` Remove filled container from scale

Next weighing cycle

Notes:

- By pressing the F key the current tare weight can be displayed. The display shows `'  8.0kgT  .'`
- If **F key** is pressed once more while tare weight is displayed, the actual weight is shown with tenfold resolution (x10 function). The display shows `'X10_____119.03.'` Press **F key** again to return to initial step or display returns to initial step automatically after 5 sec.
- Printout or data transmission is only possible when:
  - Printer **or** data transmission is enabled in Supervisor Mode.
  - A print format is configured. Contact your supplier for further details.
- The function 'Totalizing' can be disabled in Supervisor Mode in the step 'Totals?' In this case, the Print and Total keys are disabled.

4.1.1 Flowchart BASIC

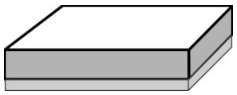


4.2 COUNT (Parts Counting)

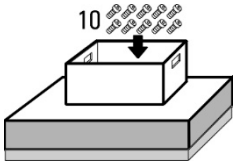
Operating mode 'COUNT' permits the counting of an unknown number of pieces with identical piece weight, based on weighing a specified number of reference parts and the comparison of their weight with the unknown quantity.

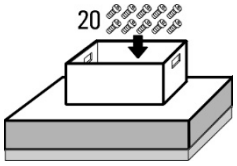
4.2.1 Counting Into An Empty Container

Weigh reference parts

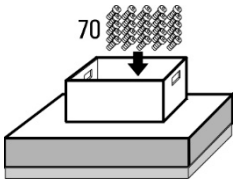


0.2kg	
ø 0.0kg	Set scale to zero
8.0kg	Place empty container on scale
0.0kgNET	Tare scale (NET indicates net mode)
Ref.Parts 10	Number of reference parts is displayed
Ref.Parts 10	Put 10 parts (reference parts) into container
10Pcs 100.0g	Number and average piece weight of reference parts is displayed
Opt 10Pc	Optimization of reference weight possible
Opt 30Pc	Add further (uncounted) parts, the average piece weight is optimized.

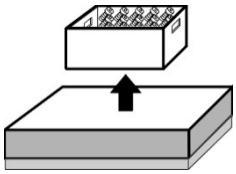




Count pieces

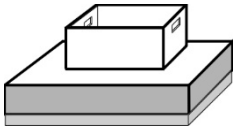


Opt 100Pc	Add parts for counting unknown quantity or to reach desired number. Example: Add further parts (70 in this case) to reach 100.
Print	P 10.0kgNET — Printing / data transmission of piece count

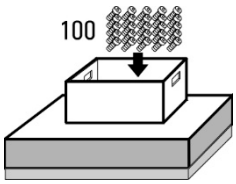


Opt 0Pc	Remove filled container from scale, empty out and place on scale again

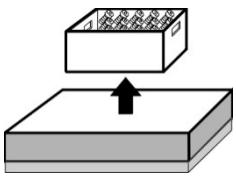
Count further pieces



Opt 0Pc	Empty container on scale



Opt 100Pc	Fill parts into container until desired number is reached
Print	P 10.0kgNET — Printing / data transmission of piece count



Opt 0Pc	Remove filled container from scale, empty out and place on scale again

Calculate totals and terminate cycle

Total Clr	Total 2 — Totalizing: Show number of weighings
Total Clr	200Pc* — Show total number

Clear memory or return

Print	Delete...	Print totals and clear memory
or:		
Total Clr	0Pc	Return to basic step without clearing totals
	0Pc	**Continue with next weighing cycle**

Change number of reference parts

In the sequence described before, 10 reference parts are used for counting. This number may be changed in the step 'Ref. Parts':

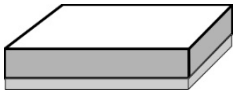
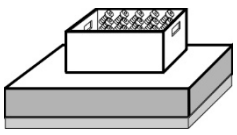
→T← +1 , →0← 0	Ref.Parts 20	Change number of reference parts as desired
Print	20Pcs 100.0g	Confirm value

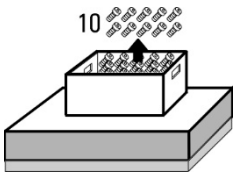
Note:

- If too many pieces are put on the scale, optimization is not possible and the 'Opt' message disappears from the display.
- If a different piece is to be weighed, press ↑ **key** to abort the current cycle. If the next weighing is not to be added to the accumulated total, the memory must be cleared first.
- The function 'Totalizing' can be disabled in Supervisor Mode in the step 'Totals?' In this case, the Print and Total keys are disabled.

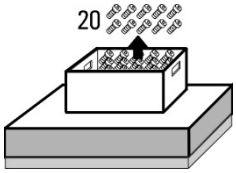
4.2.2 Counting From A Filled Container

Weigh reference parts

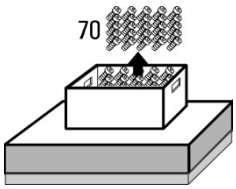
	0.2kg	
→0← 0	ø 0.0kg	Set scale to zero
	108.0kg	Place empty container on scale
→T← +1	0.0kgNET	Tare scale (NET indicates net mode)
Print	Ref.Parts 10	Number of reference parts is displayed



Ref.Parts 10	Take 10 pieces (reference parts) out of container
10St 100.0g	Number and average piece weight of reference parts is displayed
Opt 10Pc	Optimization of reference weight possible
Opt 30Pc	Take out further (uncounted) parts, the average piece weight is optimized.

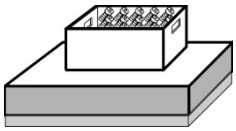


Count pieces

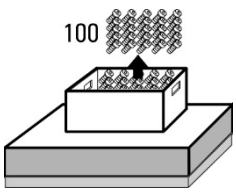


Opt 100Pc	Take out parts for counting unknown quantity or to reach desired number. Example: Take out further parts (70 in this case) to reach 100.
P 100Pc	Printing / data transmission of piece count

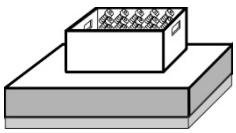
Count further pieces



Opt 100Pc	Container (from which pieces have already been taken out) is still on scale.
10000Pc	Set scale to gross weight (clear tare)
0Pc	Tare scale



Opt 100Pc	Take out parts from container until desired number is reached.
P 100Pc	Printing / data transmission of piece count
Opt 100Pc	**Take out further parts or remove container from scale.**



Calculate totals and terminate cycle

Total Clr	Total 2	Totalizing: Show number of weighings
Total Clr	200Pc*	Show total number

Clear memory or return

Print	Delete...	Print totals and clear memory
or:		
Total Clr	0Pc	Return to basic step without clearing totals

0Pc	**Continue with next weighing cycle**

Change number of reference parts

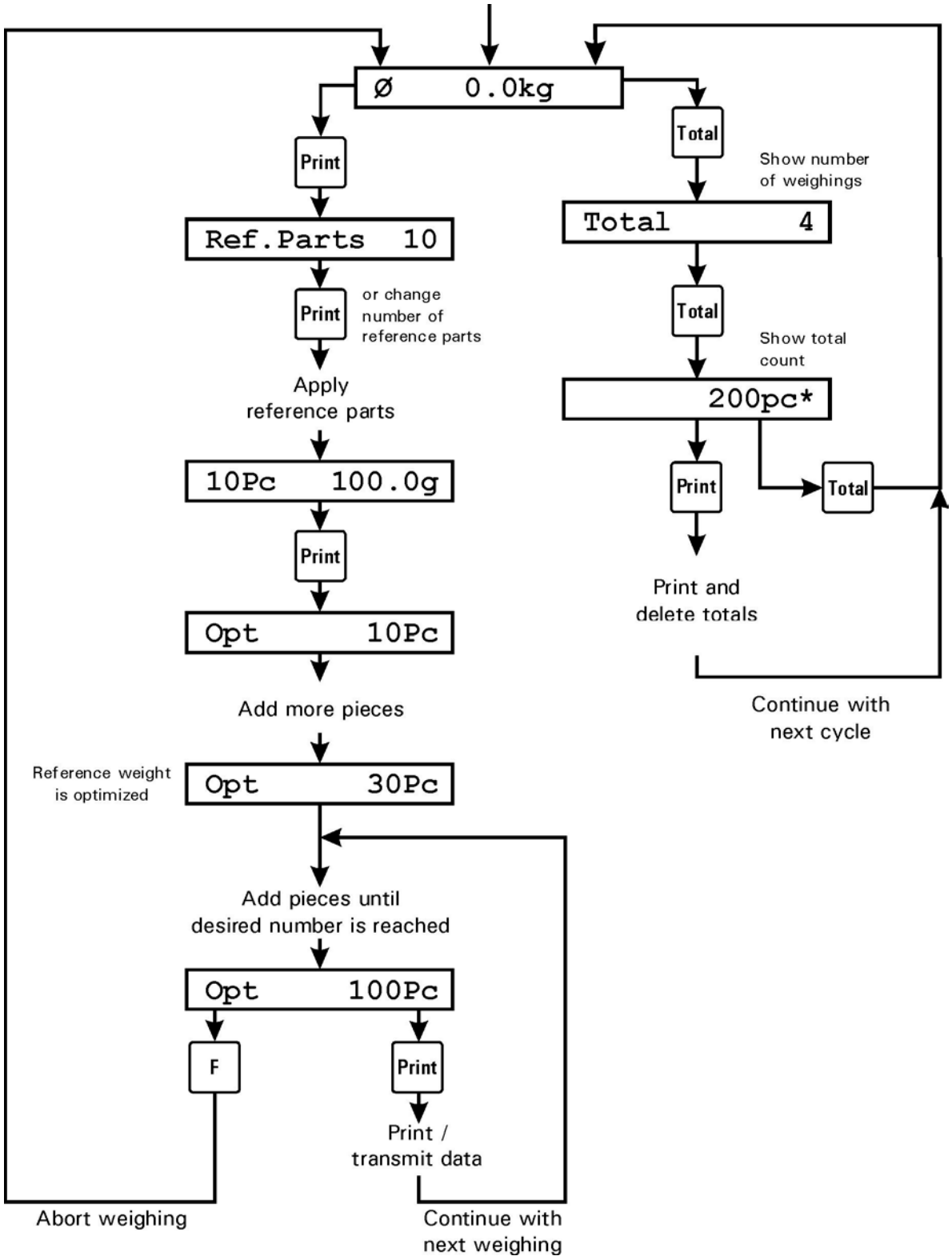
In the sequence described before 10 reference parts are used for counting. This number may be changed in the step 'Ref. Parts':

→T← +1 , →0← 0	Ref.Parts 20	Change number of reference parts as desired
Print	20Pcs 100.0g	Accept value

Please note:

- If too many pieces are taken out of the container, optimization is not possible and the 'Opt' message disappears from the display.
- If a different piece is to be weighed, press ↑ **key** to abort the current cycle.
  If the next weighing is not to be added to the accumulated total, the memory must be cleared first.

4.2.3 Flowchart COUNT



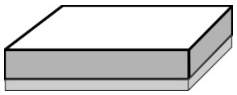
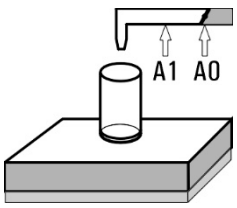
4.3 FILL (Filling)

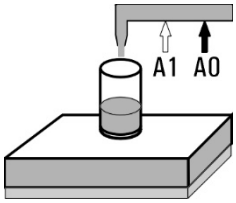
In the operating mode 'FILL' a complete 2-speed filling cycle can be carried out. Before filling is started, the target and the preact values must be entered. The switching point from fast to slow speed filling is calculated as target value minus setpoint S1, whereas the cutoff point for filling in slow speed is calculated as target value minus setpoint S2.

Enter setpoints and target weight

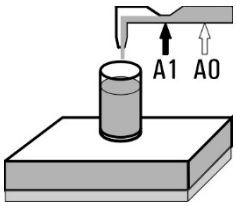
→T← +1 and →0← 0		Press simultaneously in the basic step to restart terminal (warm start)
F		Press during start of program to access Supervisor Mode
Print	Sp.1 20.0	Press ↵ **key** repeatedly until step to enter setpoint S1 (fast / slow switching point) is shown; in this example: 100−20=80.
Print	Sp.2 5.0	Enter setpoint S2 (cutoff point slow filling); in this example: 100−5=95.
Print	Saving...	Press ↵ **key** repeatedly until Supervisor Mode is exited.
	ø 0.0kg	In the basic step press **F key**
F	Target 100.0	Enter target weight in the basic step and confirm with the ↵ **key**.

Filling

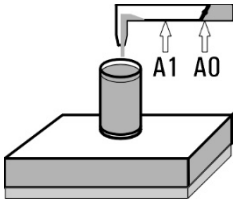
	0.2kg	
→0← 0	ø 0.0kg	Set scale to zero
	8.0kg	Place empty container on scale
Print	Taring...	Start filling with ↵ **key** or external signal E0 (e.g. push button). Scale is automatically tared or set to zero.



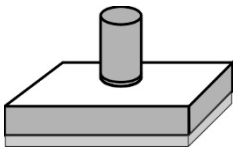
F 40.2kgNET	Feeding device for fast-speed feeding is controlled with output signal A0 (F). Container is filled in fast speed until setpoint Sp1 is reached (fast / slow switching point). In this example at: 100—20=80 kg.



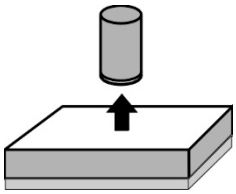
S 88.2kgNET	Feeding device for slow-speed feeding is controlled with output signal A1 (S). Container is filled in slow speed until setpoint Sp2 is reached (cutoff point). In this example at: 100—5=95 kg.



97.2kgNET	After both signals have been switched off, the material that is still between the feeder and the scale falls into the container.

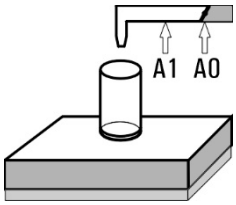


P 99.2kgNET	Weight is captured and added to totalizing memory.



ø 0.0kg	Remove container from scale

Filling of further containers



8.0kg	Put empty container on scale

Taring...	**Scale is automatically tared and next filling cycle started**

Calculate totals and terminate cycle

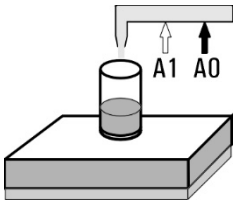
Total Clr	Total 3	Totalizing: Show number of weighings
Total Clr	302.8kg*	Show total net weight

Clear memory or return

Print	Delete...	Clear memory
or:		
Total Clr	8.0kg	Return to basic step without clearing totals

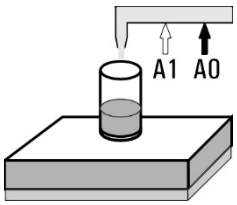
Next batch

Interrupt filling



	F 40.2kgNET	The cycle can be interrupted during fast- or slow-speed filling.
Print	H 40.2kgNET	Interrupt filling with ↵ **key** or external signal E1 (e.g. push button); (display H = Hold)
Print	F 55.2kgNET	Continue filling with ↵ **key** or external signal E1 (e.g. push button).

Abort filling



	F 40.2kgNET	The cycle can be aborted during fast- or slow-speed filling.
Print	H 40.2kgNET	Interrupt filling with ↵ **key** or external signal E1 (e.g. push button).
F ↑	40.2kgNET	Press ↑ **key** to abort cycle (e.g. ruptured bag or material short).

Start next filling cycle

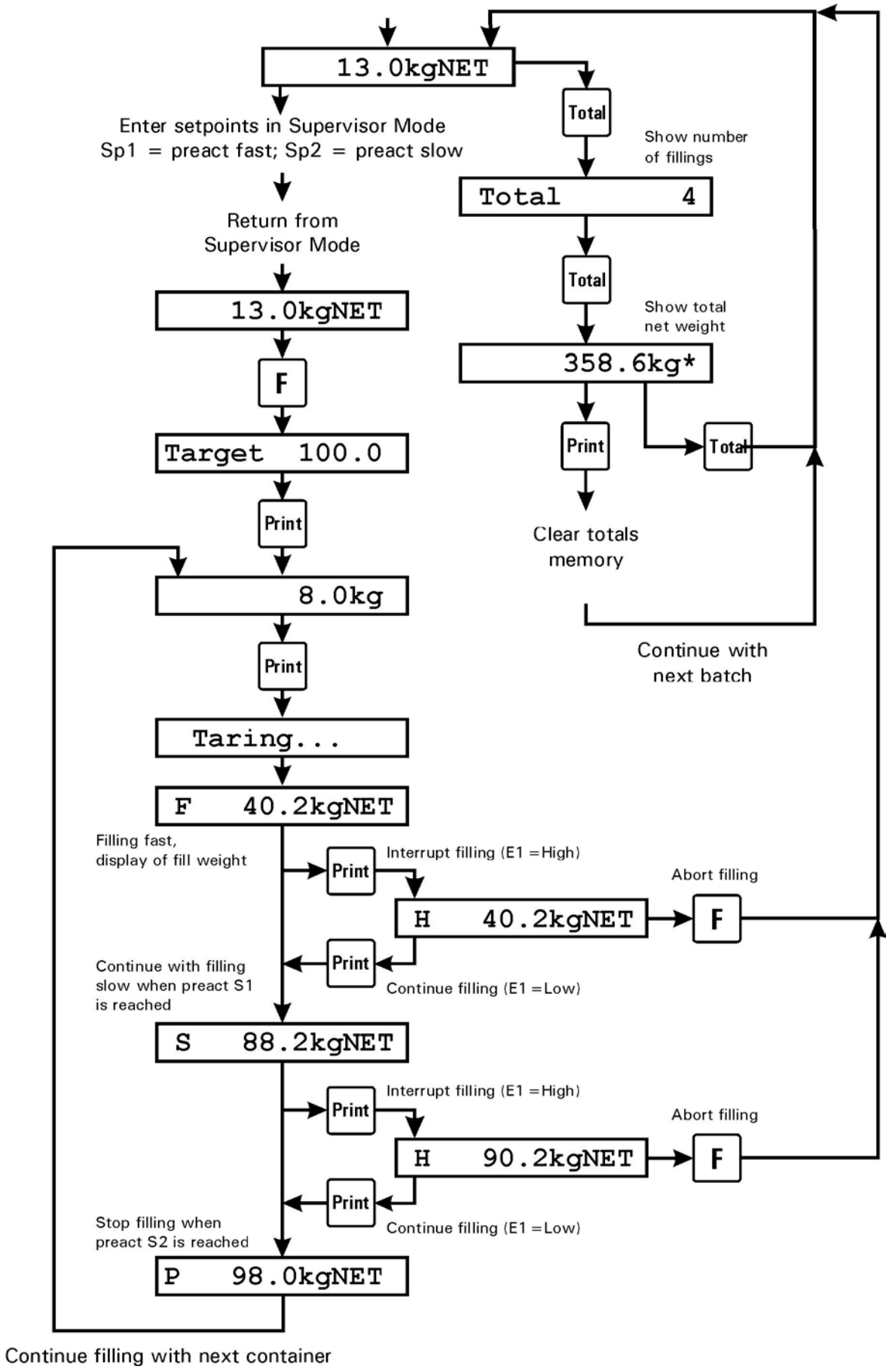
Notes:

- If parameter 'Start Locked' is set in Service Mode, start with ↵ **-key** is disabled and cycle can only be started via input E0.
- **Preact correction:** If the automatic trend-sensing preact correction is enabled in Supervisor Mode, the value for preact slow (=cutoff point slow-speed feeding) is recalculated with every completed filling cycle and saved. The operator may manually change this value, e.g. to shorten – after change of material – the learning curve that the controller needs to again reach target (usually within 4 filling cycles).

Overview setpoint settings

	Example		Target weight: 100 kg
Setting	S1 (fast)	S2 (slow)	Filling sequence
S1 greater S2	20	5	• up to 80 kg filling fast speed • up to 95 kg filling slow speed • material in flight up to 100 kg
S2 = 0	20	0	• up to 80 kg filling fast speed • up to 100 kg filling slow speed (preact for in-flight compensation disabled)
S2 greater or equal S1	20	≥ 20	• up to 80 kg filling fast speed • material in flight up to 100 kg (filling slow is disabled, filling is only controlled via output A0)

4.3.1 Flowchart FILL



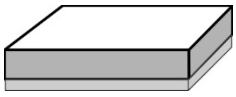
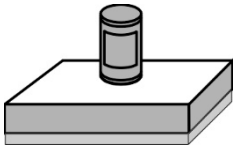
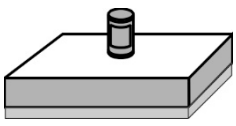
4.4 CHECK (Checkweighing)

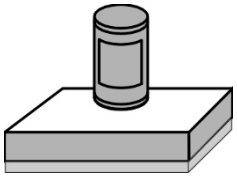
In operating mode 'CHECK' the weighing terminal works as a plus/minus checkweigher, classifying the weight of a test object in 3 zones (plus / ok / minus). The minus threshold is defined as target weight minus value of setpoint S1, while the plus threshold is defined as target weight plus value of setpoint S2.

Enter tolerances and target weight

→T← +1 and →0← 0		Press simultaneously in the basic step to restart terminal (warm start)
F		Press during start of program to access Supervisor Mode
Print	Sp.1 5.0	Press **Print key** repeatedly until step to enter setpoint S1 (—tolerance) is shown
Print	Sp.2 10.0	Enter setpoint S2 (+tolerance)
Print	Saving...	Press **Print key** repeatedly until Supervisor Mode is exited.
	ø 0.0kg	In the basic step press **F key**
F	Target 50.0	Enter target weight, confirm with **Print key**

Checkweighing

	ø 0.2kg	
→0← 0	0.0kg	Set scale to zero
	O 55.2kg	Place test object on scale; check and display of check result: weight is within tolerance band (O =ok), in this example between 45 kg and 60 kg
Print	P 55.2kg	Printing / data transmission of weight
	– 37.2kg	Place next test object on scale; check and display of check result: minus tolerance (—), not ok, in this example below 45 kg

Print	P 37.2kg	Printing / data transmission of weight
	+ 70.4kg	Place next test object on scale; check and display of check result: plus tolerance (+), not ok, in this example above 60 kg
Print	P 70.4kg	Printing / data transmission of weight

Calculate totals and terminate cycle

Total Clr	Total 3	Totalizing: Show number of weighings
Total Clr	162.8kg*	Show total weight

Clear memory or return

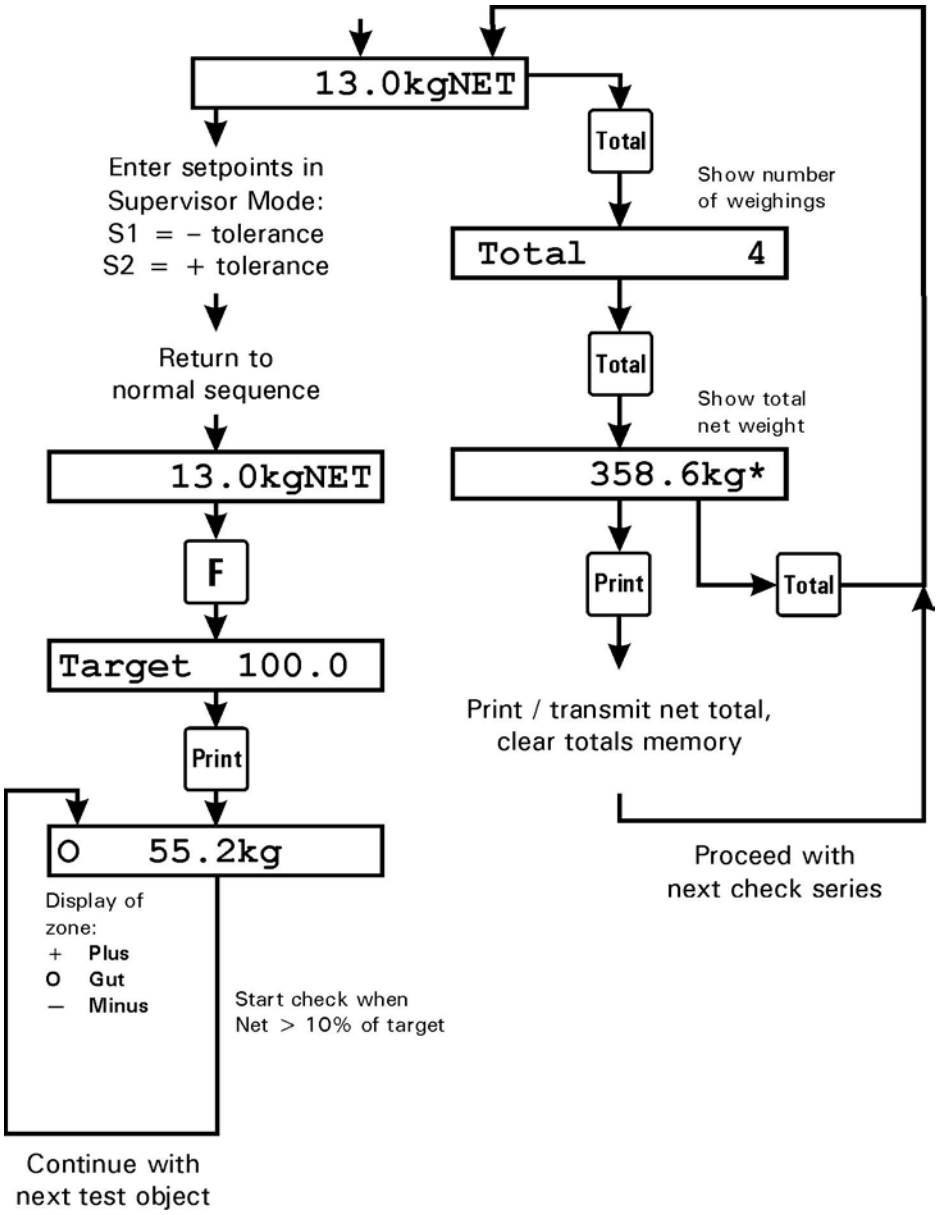
Print	Delete...	Print totals and clear memory
or:		
Total Clr	8.0kg	Return to basic step without clearing totals

Continue with next check cycle

Note:

- Unless the terminal is equipped with a real-time clock module, target weight is not stored and must be entered every time when power is switched on!
- The function 'Totalizing' can be disabled in Supervisor Mode in the step 'Totals?' In this case, the Print and Total keys are disabled.

4.4.1 Flowchart CHECK



4.5 ONLINE (Remote Control From PC)

In the operating mode 'ONLINE' the weighing terminal works under remote control from a PC over the optional serial interface.

5 Transport, Maintenance And Cleaning

5.1 Transport

CAUTION
Transport and storage of the weighing terminal shall only be made in the original packing with foam cushion. The module must not be exposed to shock or vibration.

Notes:

- Transport and storage of electronic components such as boards, EPROMS, etc. must only be made in suitable anti-static ESD bags or cases.
- Storage temperature –25 to +70 °C at 95 % max. relative humidity without condensation.

5.2 Maintenance

W A R N I N G
Disconnect all power to this instrument before opening the housing! Risk of electrical shock!

CAUTION
This unit and its associated equipment must be maintained by qualified personnel only, who are familiar with the construction and operation of all equipment in the system and the potential hazards involved. Failure to observe these precautions could result in bodily injury!

The IT1000 terminal is designed to require a minimum of maintenance and service, however, depending on the environmental conditions a visual inspection at regular intervals is recommended. The frequency at which normal maintenance (cleaning and inspection) should be performed, when installed in a clean office environment, should be twice a year. However, if the unit is subject to a dusty or dirty environment the frequency should be increased as required. At these inspections it should be made sure that all connected cables are undamaged and that all connectors are tightly fastened.

Maintenance of scale platforms is required at regular intervals depending on use and environment. The accuracy of scales can be affected by dirt, foreign objects, etc. and appropriate maintenance is strongly recommended. Also recommended is the calibration with certified test weights at regular intervals.

5.3 Battery Version

Battery life of a new, fully charged battery pack is approx. 40 hours, depending on the connected load cells and the use of the backlighting. Charge time of a discharged battery pack is approx. 3 hours.

Battery life also depends on several other factors such as ambient temperature and age of battery.

Note: A flashing battery symbol at the right edge of the display indicates 'Low Bat.' and the need to recharge the battery.
When the battery has reached its permissible minimum capacity, the IT1000 is switched off. If the operator tries to switch it on again, the power up sequence is aborted after the display of the actual charge state to avoid damage to the battery.

Storage of battery pack

The following conditions for the storage of the battery pack should be observed:

- Charge state when battery is stored: 80 %;
- Recharge battery to 80 % at 3-month intervals;
- Storage temperature between 10 °C and 20 °C.

Failure to observe these conditions damages battery capacity and reduces life time.

5.4 Cleaning

W A R N I N G
Disconnect all power to this instrument before opening the housing! Risk of electrical shock!

Clean the keyboard and covers with a soft clean cloth that has been dampened with a mild window type cleaner. Do **NOT** use any type of industrial solvent or the finish of the unit may be damaged. Do not spray cleaner directly on the unit.

If cleaning agents are used that contain leach, acid or alcohol, pure water must be used to wash off any residue.

6 Trouble Shooting

Notes:

- This unit does not contain any customer serviceable parts!
- Only permit qualified personnel to service this equipment. Exercise care when making checks, tests, and adjustments!

If any problem arises that has not been explained above, please follow this check list:

- Power supply on and line cord undamaged (visual inspection)?
- All cables connecting to scales and peripheral devices undamaged (visual inspection)?
- Connectors fitted correctly and tightly secured at peripheral devices (visual inspection)?

If operational difficulties are encountered that cannot be rectified by means of this manual, obtain as much information as possible regarding the particular trouble, as this may eliminate a lengthy, detailed checkout procedure.

If possible, try first to determine the conditions under which the problem occurs. Try to find out whether the appearance of the difficulties can be reproduced under the same conditions.

For the systematic analysis of an unknown problem the information as listed below is required:

- Serial-No. of the unit and its peripheral components
- Program version as displayed on power up
- Exact wording of any error message displayed
- Type and model of peripheral devices related to the problem (e.g. scale, printer, etc.)

To obtain professional assistance contact your service station stating the information listed above.

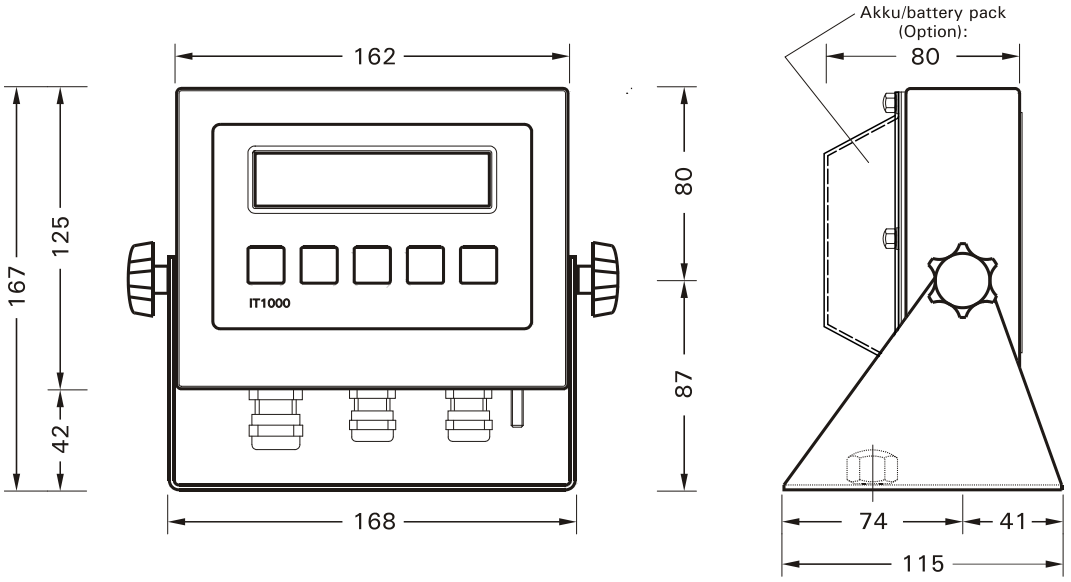
Note: It is suggested that assistance from trained service personnel be requested in the event a problem should arise that is beyond the scope of this instruction manual.

6.1 Error Messages

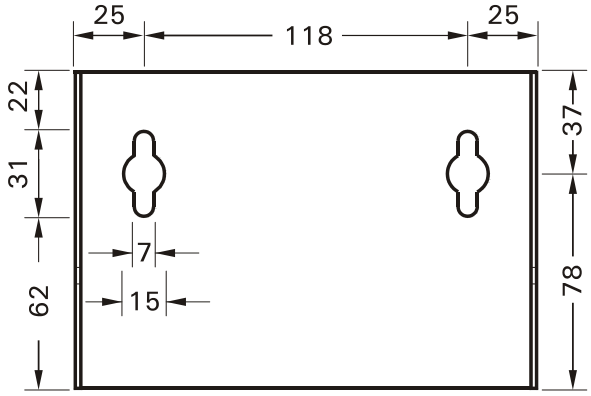
Error message	Possible cause	Corrective measure
`-------`	• Scale in overload • CPU does not receive data from weighing interface	• Unload scale • Check internal and external wiring and cabling
`Zero Over`	• Error power up zero. This message appears on power up if the weight on the scale exceeds the power up zero range as set in the calibration (+2 %, +10 %).	• Unload scale
`Zero Under`	• Weight below power up zero range. This message appears on power up if the weight on the scale is below the power up zero range as set in the calibration (–2 %, –10 %).	• Apply dead load
`Motion`	• This message appears on power up if the scale is in motion and a stable weight reading cannot be obtained within the power up zero range as set in the calibration (±2 %, ±10 %).	• Settle scale
`P 520kg`	• Printer not ready • Paper out • RTS/CTS enabled and no reply from printer	• Switch printer on • Provide paper • Rectify cause of the problem, if not possible switch terminal off and on again and disable printer in Supervisor Mode

Error message	Possible cause	Corrective measure
`Error Transm.`	• Host switched off or off-line, data cable not connected or damaged	• Check cable and connectors • Press **Print key** to repeat transmission • Press **F key** to abort transmission
`ADMOver`	A/D converter overrange:	
	• Wiring error load cell	• Check wiring
	• Load cell defective	• Check load cell
	• Scale heavily overloaded	• Unload scale
`LoadFactory`	• ADM is not factory calibrated	• Call service
`LoadServ.Para`	• Data lost	• Press **Tare -key** and **0 -key** simultaneously to set default values

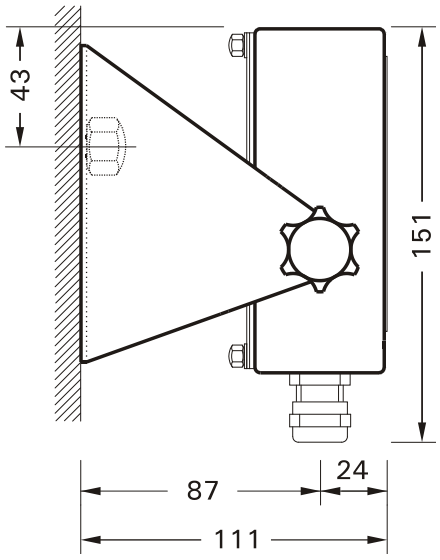
7 Dimensions



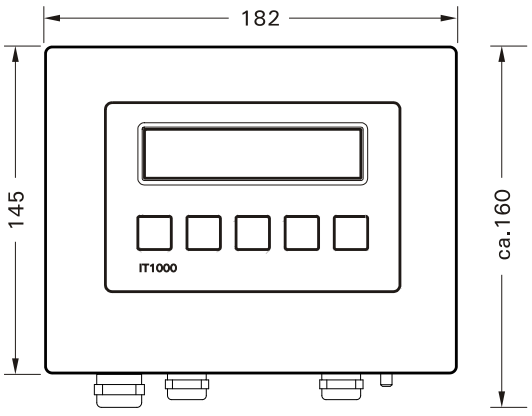
Holes for wall-mount installation



Wall-mounting



Panel-mount



Cut-out in front panel