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1 Introduction

1.1 What are the capabilities of the LC-P45 Printer?
The LC-P45 is a versatile dot matrix printer with advanced print functions for normal paper. It can supplement the weight value with date, time and other data. It has two LocalCAN interfaces and one RS-232-C interface and is primarily suitable for attachment to METTLER TOLEDO balances and scales equipped with the standard software, but will also print out the records of the METTLER TOLEDO application software Pacs (M-Pacs) and of the LP16 and LJ16 METTLER TOLEDO Infrared Dryers.

The various print functions of the LC-P45 can be selected in the dialog mode (English, German, French, Spanish or Italian). The settings are stored in a fail-safe manner thanks to battery buffering.

• Print weight
  The LC-P45 prints out the weight displayed on the balance directly.

• Insertion of
  - Date and time
  - Lot identification (ID)
  - Balance identification
  - Current sample No.
  For users complying with quality management regulations such as GLP or GMP or for those who wish for a detailed record of a weighing. You can supplement the weighing result by automatically printing out any of the adjacent data.

• Sample code
  The sample code, a comment for a more detailed definition of the weighing sample, is entered directly for every sample.

• Generate statistics
  Without the need to purchase peripherals or software, the LC-P45 automatically generates statistics of the weight values of your sample series and calculates the most important statistical parameters.

• Totalization
  The LC-P45 can also totalize weight values, thus calculating and documenting running totals. This function is especially useful when weighing in formulations.
2 Startup procedure

2.1 Cautionary notes

For reasons of safety, the housing of the printer must not be opened by the user. If technical faults appear or if the printing unit or power line fuse has to be changed, please notify your responsible METTLER TOLEDO service.

- The LC-P45 Printer may be used only indoors and on no account in hazardous areas.
- The electronics of the LC-P45 Printer are protected against the ingress of splashing water and dust. However, as the printer housing is not tight the printer should not be used in the presence of liquids.
- Comply with cleaning instructions (see page 25), protect power plug against wet conditions.
- Never open the printer housing. Should you ever have problems with your printer, please contact your responsible METTLER TOLEDO dealer.
2.2 Inserting the batteries

Two batteries are provided and supply the clock and the memories for the variable settings of the printer when it is not connected to the power supply.

Please note: To avoid loss of any printer settings you may have made, attach the LC-P45 Printer to the power supply when changing the batteries.

- Lift up paper cover and pull paper backward out of the printing unit
- Open battery compartment and insert batteries

Inserting paper

- Feed paper through the slot in the printing unit in the direction of the arrow
- Switch on printer (toggle switch at right rear, the number of the software version will be printed out automatically)
- Press and hold until sufficient paper has been fed in

Attaching printer, printing

- Plug the cable supplied into the LC-P45 and the I/O data interface of a balance or instrument. The printer is now ready for operation!
- Print out the weight value of the balance

If no printout appears: Set both devices to the factory setting! (The interface parameters are then matched. Green pilot lamp flashes, see page 26; available functions, see page 30)
2.3 Setting date and time
Setting or changing date and time to local time.

Date (EURO or US version)
- Start date definition
- Entry of the date, e.g. 23.01.97 (EURO format, day.month.year) or 1-23-97 (US format, month-day-year)
- Concluding definition

Time (24-hour format)
- Start time definition
- Entry of the current time, e.g. 13.46.05 (hours.minutes.seconds)
- Concluding definition

Note: prints out date and time directly at all times
3 Selecting applications

### Printing out weight values

(1) ... (5) record header → p. 11)

- **Print out weight by itself**
  - **Date + time + weight (ID set to 0)**
    - 11.01.2000 14:53:32
    - 3468.08 g

- **Lot identification (ID) + weight**
  - **11.01.2000**
  - **ID** 04-83-18.5
  - **3468.08 g**

- **Date + lot identification + weight**
  - **11.01.2000**
  - **ID** 04-93-18.5
  - **3468.08 g**

- **Date + time + lot identification + weight**
  - **11.01.2000**
  - **ID** 04-93-18.5
  - **3468.08 g**

### Generating statistics of weight values

- **Date + time + weight (ID set to 0)**
  - 11.01.2000 14:53:32
  - 3468.08 g

- **Complete documentation following GLP (Good Laboratory Practice)**
  - **11.01.2000**
  - **ID** 04-83-18.5
  - **STANDARD V10.50.00**
  - **TYPE : PM6100**
  - **INR : 911375**
  - **3468.08 g**

- **Current sample number + weight**
  - 14 0.49 g
  - 15 55.61 g
  - 16 64.03 g
  - 17 123.97 g

- **Weight + sample code (comment on weighing)**
  - **Code** 8806-4.29

### Totalization

- **11.01.2000**
- **15:28:33**
- **ID** 71-00.6-34
- **1 206.55 g**
- **2 3165.92 g**
- **3 45.73 g**
- **4 2.54 g**
- **Sum 3420.74 g**
- **--------- END ---------**

- **Current sample number + weight**
  - **11.01.2000**
  - **ID** 04-83-18.5
  - **STANDARD V10.50.00**
  - **TYPE : PM6100**
  - **INR : 911375**
  - **3468.08 g**

### Multiplying (dividing)

- **Factor** 3.5
- **2.51 g**
- **8.80**

- **Calculating prices**
- **Determining volume**
- **Determining density**
- **Weighing in any weight units**
- **Calculating weight of area or length (kg/m² or g/m)**
**LP16/LJ16 IR Dryer**

- **11.01.2000 15:28:33**
- **ID**: 71-00.6-34
- **Time**: 5.0 Min
- **Temp**: 160 °C
- **Mode**: Timer
- Time eff.: 5.0 Min

**Note:** Documentation of a drying operation

**Pipette check**

- **11.01.2000 11:15:50**
- **ID**: 1128489
- **SNR**: 1118000002
- **Factor**: 1.0032
- **Rounding**: 0.0001

<table>
<thead>
<tr>
<th>Comp</th>
<th>Weight</th>
<th>% Difference</th>
<th>µl</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>98.7550</td>
<td>0.09870</td>
<td>98.7550 µl</td>
</tr>
<tr>
<td>2</td>
<td>99.0158</td>
<td>0.09876</td>
<td>99.0158 µl</td>
</tr>
<tr>
<td>3</td>
<td>99.0760</td>
<td>0.09882</td>
<td>99.0760 µl</td>
</tr>
<tr>
<td>4</td>
<td>99.1362</td>
<td></td>
<td>99.1362 µl</td>
</tr>
</tbody>
</table>

- **n**: 4
- **s**: 0.16786 µl
- **srel**: 0.17 %
- **min.**: 98.7550 µl
- **max.**: 99.1362 µl
- **dif.**: 0.3812 µl

**Note:** Verification of volumetric dosing apparatus (pipettes, volumetric flasks, burettes, etc.)

- Generating statistics and calculating the most important statistical parameters

**METTLER M-Pacs application software**

- **11.01.2000 13:29**

**% FORMULA**

<table>
<thead>
<tr>
<th>Comp</th>
<th>Weight</th>
<th>% Difference</th>
<th>µl</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>20.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>7.50</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Target**: 2500.00 g

**Note:** Documentation of the process sequence, e.g. of a formula weighing operation
Checking balance with test weight *

---- BALANCE TEST ----
11.01.2000  14:31:57

METTLER TOLEDO
Balance
Type:     PG503DR-S
SNR:      1113000000

Target:   200.000
Actual:   200.005
Diff:     0.005

Internal test done

Signature: 

....................
-------- END --------

• Documentation of the check following GLP and ISO 9001

Calibrating (adjusting) balance with calibration weight *

-BALANCE CALIBRATION -
11.01.2000  16:51:57

METTLER TOLEDO
Balance
Type:     PG503DR-S
SNR:      1113000000

Target:   200.000
Actual:   200.005
Diff:     0.005

Int. calibration done

Signature: 

....................
-------- END --------

• Documentation of the calibration following GLP and ISO 9001

* The printed records of the functions “Checking” and “Adjusting” appear in the respective national language only on connection to PR/SR balances. With all other balance models, English is used as the standard language.
4 Operation

4.1 Using the keypad

Purpose of the keypad
1. Configuring the printer
2. Entry of variable values, e.g. lot identification (ID)
3. Selection of the printer function

Input mode
The printer functions are set in the dialog mode. The entries appear in the balance display and the LC-P45 prints them out as confirmation.

4.2 Configuring the printer in the menu

What is set and how?
The menu is used to configure the operational setting of the LC-P45:
- Set LC-P45 to factory setting
- Activate checking and calibration of the balance
- Select record header
- Select language of the dialog and record texts
- Select interface parameters

These three keys are used to enter the menu, choose the setting and store the selected setting.

Note: Variables are inputted directly. It is not necessary to enter the menu.
Configuring the printer

Entry into menu

Jump to next menu item, e.g. RECORD HEADER, LANGUAGE/SPRACHE...

Selection of the setting within a menu item, e.g. English, Deutsch...

( 1 … 5 record header layout, see page 7)

Further settings if required

Quitting the menu with simultaneous storage of all selected settings

Quitting the menu without storage of the selected settings (abort)

Printing out the current menu settings

Printout of a list of the current settings

Example of a setting

Entry into menu and changing the LC-P45 LANGUAGE/SPRACHE setting from English to Spanish or Italiano

Notes:
- * These settings are the factory settings; * marks the current setting after a change
- The menu settings are stored in a fail-safe manner (battery)
- 1) Either Español or Italiano
- 2) I/O via LocalCAN interface: no setting necessary.
### 4.3 Entering values of variables

<table>
<thead>
<tr>
<th>Variable value</th>
<th>Key sequence</th>
<th>Key sequence</th>
<th>Key sequence</th>
<th>Range of values</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Time</strong></td>
<td>7</td>
<td>Def</td>
<td>3</td>
<td>Hours.minutes.seconds</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.0.0 ... 23.59.59)</td>
</tr>
<tr>
<td><strong>Date</strong></td>
<td>7</td>
<td>Def</td>
<td>-</td>
<td>EUROS: Day.month.year (1.1.00 ... 31.12.99)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>31</td>
<td>US: Month-day-year (1-1-00 ... 12-31-99)</td>
</tr>
<tr>
<td><strong>Lot identification (ID)</strong></td>
<td>7</td>
<td>Def</td>
<td>4</td>
<td>Number with max. 20 digits (0 ... 9 plus &quot;.&quot; and &quot;,&quot;)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ID</td>
<td>(0 removes the ID from the record)</td>
</tr>
<tr>
<td><strong>Sample code</strong> (comment on individual weighing)</td>
<td>5</td>
<td>Code</td>
<td></td>
<td>Number with max. 10 digits (0 ... 9 plus &quot;.&quot; and &quot;,&quot;)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>[is not stored!]</td>
</tr>
<tr>
<td><strong>Sample number start value</strong></td>
<td>7</td>
<td>Def</td>
<td>6</td>
<td>1 ... 9999 (0 removes the sample number from the record)</td>
</tr>
<tr>
<td><strong>Factor for multiplication (division)</strong></td>
<td>7</td>
<td>Def</td>
<td>*</td>
<td>0.000 001 ... 9 999 999</td>
</tr>
<tr>
<td><strong>Rounding in multiplication</strong></td>
<td>7</td>
<td>Def</td>
<td>2</td>
<td>0.05: 2 decimal places, the 2nd rounded to 5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Result</td>
<td></td>
<td>1.00: 2 decimal places, both are = 0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.001: 3 decimal places, the 3rd to the nearest 1</td>
</tr>
<tr>
<td><strong>Number of line feeds after printout of weight or result</strong></td>
<td>7</td>
<td>Def</td>
<td></td>
<td>0 ... 3</td>
</tr>
</tbody>
</table>

**Notes:**
- The input process can be checked in the balance display; correction of wrong entry with Clear.
- The inputted values are stored in a fail-safe manner (exception: sample code).
4.4 Selecting printer function

- Entry into selection

On entry, a list of the available functions with their selection numbers are automatically printed out.

- **Printing** of weight values

- **Generation of** statistics **of** weight values

- **Totalization** of weight values

The input process can be checked in the balance display.
Correction of wrong entry
- **Multiplication** (division) of weight values by a factor

- Record of **drying operation** of LP16 and LJ16 IR Dryer

- **Pipette test** for calibrating volumetric dosing apparatus

The selection of the printer function is stored in a fail-safe manner (battery)
5 Printer functions

5.1 Printing out weight values

Printing with manual insertion of date and time
- Select "No record header" in the menu item RECORD HEADER (page 11)

- Print date + time  
  ![Set date and time](page 6)

- Print weight

Printing with automatic insertion of date, time, lot identification (ID) and sample number, depending on requirements
- Select the record header according to requirements in the menu (e.g. date/time/ID; page 11)
- Enter according to requirements (page 12):
  - Lot identification (ID)

  ![Reset sample No.](start value at any time)

  - Sample number start value

- Print record header and weight automatically

- Print record header and current sample No. + weight automatically
5.2 Generating statistics of a weight series

- Select "Statistics" function (page 13)

- Select the record header in the menu (page 11)

- If required, enter lot identification (ID) (page 12)

- Load 1st sample and transfer weight value to the statistics

- Continue the sample series

- If desired, print out intermediate statistics (the sample counter is not reset)

- Continue the sample series

- Conclusion of the sample series with automatic printout of the overall statistics (the sample counter is reset, the statistics memory cleared)

\[
\overline{x} = \frac{1}{n} \sum_{i=1}^{n} x_i
\]

\[
s = \sqrt{\frac{1}{n-1} \sum (x_i - \overline{x})^2}
\]

\[
s_{\text{rel}} = \frac{s}{\overline{x}} \times 100\%
\]

- min. = smallest value
- max. = largest value
- dif. = largest - smallest value
- max. number of samples = 999
5.3 Totalizing weight values

- Select function "Totalization" (page 13)

- Select record header in the menu (page 11)

- If required, enter lot identification (ID) (page 12)

- Load 1st sample and transfer weight value to totalization memory

- Continue the sample series

- If need be, interrupt the sample series for automatic printout of the intermediate total (the sample counter is not reset)

- Continue the sample series

- Completion of the sample series with automatic printout of the total (the sample counter is reset, the totalization memory cleared)

max. number of samples = 9 999
max. total = 99 999 999 g
5.4 Multiplying (dividing) the weight by a factor

- Select function "Multiplication" (page 14)

- Select the record header in the menu (page 11)

- According to requirements, enter (page 12):
  - Lot identification (ID)
  - Sample number start value
  - Factor for multiplication (division)
  - Rounding in multiplication (division)

- Loading the weighing sample
- Automatic multiplication of the weight value by the preselected factor and printout of the result together with multiplier and weight

- Automatic multiplication by the preselected factor and printout of the result alone
5.5 Recording the moisture determination with LP16/LJ16 IR Dryer

The LC-P45 automatically inserts date, time and lot identification.

- Select function “IR Drying LP16/LJ16” (page 14)
- Select "Date/Time/ID" in menu item RECORD HEADER (page 11)
- If required, enter lot identification (ID) (page 12)
- Start drying operation according to instructions in the LP16/LJ16 operating instructions. The LC-P45 prints out the record.

5.6 Pipette test for calibrating volumetric dosing apparatus

- Select function "Pipette check" (page 14)
- Select the record header in the menu (page 11)
- Enter pipette identification (ID) (page 12)
– When necessary enter sample number start value (page 12)

• Enter the factor z (ISO 8655) to calculate the volume from the mass (page 12). This factor is essentially a function of the water temperature and atmospheric pressure

• Enter the rounding off convention for the calculated result (page 12)

• Dosing the liquid and inclusion of the first volume in the statistics. The dosed volume is calculated automatically from the measured weight by multiplying it with the factor z. The weight and the calculated volume in µl, \(V = m \times z\) are printed out

• Continue the sample series

• If desired, print out intermediate statistics (the sample counter is not reset) (page 16)

• Continue the sample series

• Conclusion of the sample series with automatic printout of the overall statistics (the sample counter is reset, the statistics memory cleared) (page 16)
5.7 Recording the processes with M-Pac application software packages

The LC-P45 prints out the records of the M-Pacs, e.g. CountPac or LabPac.

- Select "No record header" in menu item RECORD HEADER (page 11)

- The LC-P45 is ready for work with M-Pacs. It prints out their records.

Note: and are inactive
5.8 Checking a balance with a test weight

- Selection and starting the check on the balance (page 11)

The menu section ACTIVATE is automatically printed out.

The prompt for weight loading/removal is shown on the balance display. At the same time, the following record is printed out:

--- BALENCE TEST ---
11.01.2000 14:31:57
METTLER TOLEDO
Balance
Type: PG503DR-S
SNR: 1113000000
Target: 200.000
Actual: 200.001
Diff: 0.001
Internal test done
Signature: ....................
---------
END ---------

date and time of verification
balance identification
displayed weight value of the automatically tared balance
difference between target and actual value
signature of the tester

--- BALENCE TEST ---
11.01.2000 14:31:57
METTLER TOLEDO
Balance
Type: AB204
SNR: 1113000000
Weight ID: ...........
Target: ...........
Actual: 199.9800 g
Diff: ...........
External test done
Signature: ....................
---------
END ---------

date and time of verification
balance identification
identification of the test weight
target value of the checking procedure
displayed weight value of the automatically tared balance
difference between target and actual value
signature of the tester

* Minimum weight ≥ 900 in the last 3 places of the display.
  Exemple: 9.38 g
            0.945 kg
5.9 Calibrating (adjusting) a balance with a calibration weight

- Selection and starting the calibration procedure (page 11)

The menu section ACTIVATE is automatically printed out.

The prompt for weight loading/removal is shown, as usual, on the balance display. With balances with an internal calibration weight, the automatic calibration routine is started. At the same time, the following record is printed out:

**Adjusting with external adjustment weight**

- DATE AND TIME OF VERIFICATION
  - 11.01.2000 14:31:57

- METTLER TOLEDO
- Balance
- Type: PG503DR-S
- SNR: 1113000000
- Weight ID: ..........
- Weight: 500.000 g
- Ext. calibration done
- Signature: ...............

--- END ---

**Adjusting with internal adjustment weight**

- DATE AND TIME OF VERIFICATION
  - 11.01.2000 14:31:57

- METTLER TOLEDO
- Balance
- Type: PG503DR-S
- SNR: 1113000000
- Int. calibration done
- Signature: ...............

--- END ---
6.1 Changing paper and ribbon

Changing paper
- Insertion of a new roll of paper is described on page 5, commercially available, normal paper is used. Order number, see page 28.

Changing ribbon
Order number, see page 28.

- 1 Pull paper out of printing unit
- 2...4 Remove ribbon cover

- 5 Remove ribbon cartridge
- Insert new ribbon (if need be, take up slack with tensioning wheel) and refit ribbon cover
- Insert paper and feed through slit in the printing unit as far as it will go
- Press and hold  until sufficient paper has been fed in
6.2 Maintenance, Service and Cleaning

Under normal ambient conditions, the LC-P45 Printer requires practically no maintenance thanks to its rugged construction. The METTLER TOLEDO service department is available should servicing be required. Please ask your responsible METTLER TOLEDO dealer for details.

Cleaning

As the printer housing is made of top grade, resistant materials, all commercially available cleaning agents may be used.
## 7 Malfunctions

### 7.1 Interpreting the error messages

<table>
<thead>
<tr>
<th>Malfunction/Message</th>
<th>Possible cause</th>
<th>Rectification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Printout unreadable</td>
<td>• Ribbon worn/entangled</td>
<td>• Change/tension ribbon</td>
</tr>
<tr>
<td></td>
<td>• Service life of printing unit at an end</td>
<td>• Replace printing unit</td>
</tr>
<tr>
<td>Green pilot lamp does not light up</td>
<td>• No power, fuse defective</td>
<td>• Switch on power switch, have fuse replaced by METTLER TOLEDO</td>
</tr>
<tr>
<td>Green pilot lamp flashes slowly</td>
<td>• Balance waiting for stability/ cable not attached</td>
<td></td>
</tr>
<tr>
<td>Green pilot lamp flashes rapidly</td>
<td>• Transmission error</td>
<td></td>
</tr>
<tr>
<td>---- Interruption ----</td>
<td>• Connection cable not attached or older balance (unidir. interface)</td>
<td>• Check handshake, initiate print command with PRINT key of balance</td>
</tr>
<tr>
<td>Transmission error  -</td>
<td>• Interface parameters of LC-P45 and balance do not match</td>
<td>• Set interface parameters</td>
</tr>
<tr>
<td>--------- ABORT  ---------</td>
<td>• Calibration has been aborted</td>
<td>• Repeat calibration</td>
</tr>
</tbody>
</table>
• Entry incomplete, menu not ended, balance has not sent any weight value in last 30 s

• Pause before completion of function must not be longer than 30 s, move balance to more stable location

• Batteries for clock and settings discharged

• Replace batteries; message repeated approx. every 2 hours

• Number of samples for multiplication exceeded

• Repeat entry

• Range of values exceeded

• Different units in totalization, statistics or multiplication

• Syntax error (error message of balance), balance does not understand LC-P45 instruction

• Logistical error (error message of balance), balance can not execute LC-P45 instruction
8.1 Accessories for LC-P45 Printer

<table>
<thead>
<tr>
<th>Accessory</th>
<th>Type/Order number</th>
<th>Standard equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper roll, set of 5</td>
<td>00072456</td>
<td>2 rolls</td>
</tr>
<tr>
<td>Ribbon cartridge, black, minimum order quantity 2</td>
<td>00065975</td>
<td>1 piece</td>
</tr>
<tr>
<td>Batteries, 2 x UM3/AA (1.5 V)</td>
<td>commercially available</td>
<td>2 piece</td>
</tr>
<tr>
<td>Connection cable LC-P45-balance/scale, LocalCAN, 1 m</td>
<td>LC-LC1 cable, 00229154</td>
<td>1 piece</td>
</tr>
<tr>
<td>Extension cable/connection cable LocalCAN, 2 m</td>
<td>LC-LC2 cable, 00229115</td>
<td>–</td>
</tr>
<tr>
<td>Extension cable/connection cable LocalCAN, 5 m</td>
<td>LC-LC5 cable, 00229116</td>
<td>–</td>
</tr>
<tr>
<td>T-socket for devices with only one LocalCAN socket</td>
<td>LC-LCT, 00229118</td>
<td>–</td>
</tr>
<tr>
<td>Connection cable LC-P45-balance, RS-232C, 1 m</td>
<td>RS9 (m)–RS9 (f) cable, 11101051</td>
<td>1 piece</td>
</tr>
<tr>
<td>Connection cable LC-P45-balance, RS-232-C (MiniMettler), 1.5 m</td>
<td>00229029</td>
<td>–</td>
</tr>
<tr>
<td>Spare printing unit (may be changed only by METTLER TOLEDO service)</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Power line fuse 230 V (slow-blow 100 mA,250 V) + 115 V (slow-blow 200 mA,250 V) (may be changed only by METTLER TOLEDO service)</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>
8.2 I/O interfaces

The LC-P45 has a LocalCAN and an RS-232-C interface for the attachment of METTLER TOLEDO instruments and peripherals.

One or other can be used, but if both are connected only the LocalCAN is active.

LocalCAN interface
- Bus interface with 2 4-pin looped sockets for the attachment of balances/scales/instruments and peripherals.
- No transmission parameters need be adapted.

RS-232-C interface
- 9-pin male connector (pin assignment as IBM laptop)
- Matching to other device (transmission parameters) in the menu; see page 11
- The handshake lines are active when "hardware" has been selected in menu item HANDSHAKE
- The standard cable 00229029 has no handshake lines

Connection example
A scale and a PC are attached to the LC-P45 via the LocalCAN bus.
### 8.3 Attachment to METTLER TOLEDO instruments, additional hardware, available functions (software version 2.40)

<table>
<thead>
<tr>
<th>Attachment to balance or instrument</th>
<th>Available functions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Attachment to LC-P45</strong></td>
<td></td>
</tr>
<tr>
<td>AB, PB, SB, CB, GB, B *</td>
<td></td>
</tr>
<tr>
<td>AB, AB-S, PB, PB-S, SB, **</td>
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<tr>
<td>CB, GB, B</td>
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<tr>
<td>AG, PG</td>
<td></td>
</tr>
<tr>
<td>PG-S with RS232C</td>
<td></td>
</tr>
<tr>
<td>PG-S with LocalCAN Option</td>
<td></td>
</tr>
<tr>
<td>PR</td>
<td></td>
</tr>
<tr>
<td>AT/MT/UMT</td>
<td></td>
</tr>
<tr>
<td>PM/SM/AM</td>
<td></td>
</tr>
<tr>
<td>PJ/AJ Option 018/019</td>
<td></td>
</tr>
<tr>
<td>BB</td>
<td></td>
</tr>
<tr>
<td>M3/UM3 with Option 03</td>
<td></td>
</tr>
<tr>
<td>AE with Option 011</td>
<td></td>
</tr>
<tr>
<td>AE with Option 012</td>
<td></td>
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<tr>
<td>PE with Option 016</td>
<td></td>
</tr>
<tr>
<td>PE with Option 017</td>
<td></td>
</tr>
</tbody>
</table>

#### Additional hardware and Remarks

- Printing weight
- Recording
- Statistics, totalization, multiplication
- Record header with time, date, ID
- Calibrating documented
- Checking of balance documented
- Printing balance identification
- Print command from LC-P45
- Checking of key entries in balance display

#### Options

- Option 01
- Option 03
- Option 011
- Option 012
- Option 016
- Option 017

#### Remarks

- 9
- 15
- 1
- 14
- 2
- 4
- 5

#### Available functions

- ● Available
- ○ Not available
<table>
<thead>
<tr>
<th>Attachment to balance or instrument</th>
<th>Remarks</th>
<th>Additional hardware</th>
<th>Printing weight</th>
<th>Printing record</th>
<th>Statistics, totalization, multiplication</th>
<th>Record header with time, ID</th>
<th>Calibrating documented</th>
<th>Checking of balance documented</th>
<th>Printing balance identification</th>
<th>Print command from LC-P45</th>
<th>Checking of key entries in balance display</th>
</tr>
</thead>
<tbody>
<tr>
<td>LP16/LJ16</td>
<td>1 13</td>
<td></td>
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<tr>
<td>PM-Pacs</td>
<td>1 12,13</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ID3 with Option 082</td>
<td>10</td>
<td></td>
<td>6</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>ID5 with Option 082/089</td>
<td>10</td>
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<td>6</td>
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<td></td>
</tr>
<tr>
<td>IF with 504949</td>
<td>13</td>
<td></td>
<td>6</td>
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<td></td>
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<tr>
<td>DT</td>
<td>13</td>
<td></td>
<td>8</td>
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</tr>
<tr>
<td>DL18/21/25/35</td>
<td>13</td>
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<td>7</td>
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<td>FP62</td>
<td>13</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Legend and general remarks to the attachment of the LC-P45 to METTLER TOLEDO instruments

Legend

Connection cable to LC-P45

- 1  000229029 is standard
- 2  Order number: 00042931
- 3  00059759 included in option
- 4  Order number: 000229029
- 5  Order number: 00047936
- 6  Order number: 00504376
- 7  Order number: 00017842
- 8  Produce cable → page 29
- 9  LC-LC1 cable is standard
- 10 RS → RS9 (m) – RS9 (f) cable is standard
  • = LocalCAN  ○ = RS-232-C/CL

CL/RS-Interface converter

□  CL249, Order number: 00059759

Adapter cable and hand switch

□  Order number: 00047473
□  Order number: 00042500

* Balance models earlier than 02.97
** Balance models after 02.97

Continuation legend

10 Interface mode:
   DIALOG MODE (standard setting).
   If the terminal is in break condition, it has to be switched off and on again.
   The LC-P45 can print maximally 24 characters a line, additional characters will be discarded.

12 Printout of Pac record only

13 Check of key entries via printout only, the balance display is inactive.
   Example: Setting the time. After the set time is printed out:

   --- > 13:55

   Documentation of calibration after balance software version 10.45.

15 For the AB, PB, SB, GB, CB and B balances and scales earlier than 02.97, the interface "LC-B Option" is required.

General remarks

- With or only stable weight values can be printed out; to print out unstable values, set the balance to "send all" and give the print command with its PRINT key.
- Do not set the balance to "send all" for statistics, totalization and multiplication.
- If the PRINT key of the balance is pressed, the weight will be printed out without record header
8.4 Technical data

Printer
- Printing unit: dot matrix printer 5x9 dots, 24-character line length, Epson/IBM character table No. 4
- Printing speed: faster than 1 line per second
- Ribbon cartridge: exchangeable, black
- Paper roll: normal paper, 58 x dia. 51 mm, integrated in housing, commercial size

Printer functions
- see page 3

Clock
- Date representation: EURO or US format, leap year taken into account

Interface
- Transmission parameters LocalCAN: fixed adjustment
- Transmission parameters RS-232-C: transmission rate 1200, 2400* baud,
  parity even*, odd, no
  character length 7 bit*, 8 bit
- Handshake: Bidirectional handshake: off*, xon/xoff, hardware
- Printer buffer: 128 characters

* = factory setting
**Designed test conditions**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply voltage, Frequency</td>
<td>115 V oder 230 V, admissible fluctuations -20%+15%, 50/60 Hz</td>
</tr>
<tr>
<td>Current consumption</td>
<td>140 mA or 70 mA</td>
</tr>
<tr>
<td>Height</td>
<td>4000 m</td>
</tr>
<tr>
<td>Temperature range</td>
<td>5...40 °C</td>
</tr>
<tr>
<td>Humidity</td>
<td>max. relative humidity 80% for temperatures to max. 31 °C linear decreasing to 50% at 40 °C</td>
</tr>
<tr>
<td>Installation category</td>
<td>II</td>
</tr>
<tr>
<td>Pollution degree</td>
<td>2</td>
</tr>
<tr>
<td>Dimensions / weight</td>
<td>W x D x H = 157 x 210 x 85 mm / net 1.5 kg (incl. paper roll)</td>
</tr>
</tbody>
</table>
To protect your METTLER TOLEDO product's future:
METTLER TOLEDO service assures the quality, measuring accuracy and preservation of value of all METTLER TOLEDO products for years to come.
Please send for full details about our attractive terms of service.
Thank you.