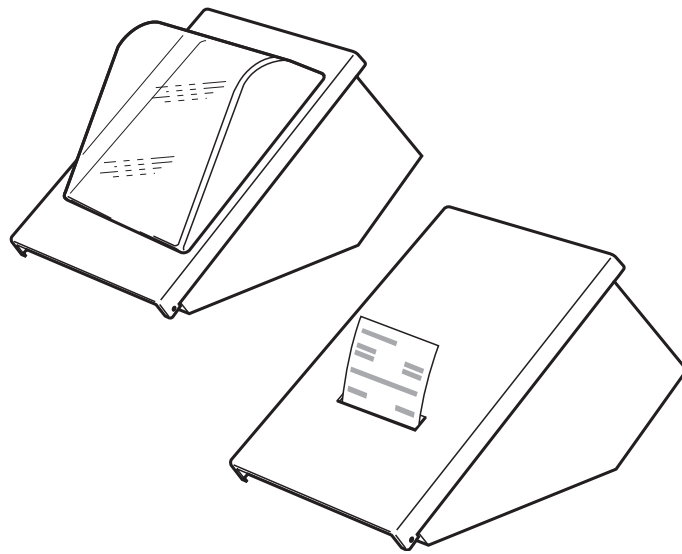


# Operating instructions and installation information

**METTLER TOLEDO MultiRange  
GA46/GA46-W printers**

**METTLER TOLEDO**





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## 1 The GA46/GA46-W printers

- The GA46/GA46-W printers are part of a modular system. They can be attached to METTLER TOLEDO MultiRange weighing terminals with a serial RS232 interface.
- Depending on the weighing terminal used, the important weighing and application data are printed out in accordance with the default setting in question. The printout is effected by pressing the Print key, e.g. Transfer key.
- Depending on the capability of the weighing terminal, you also have the possibility in the master mode of the weighing terminal or the serial interfaces to design the printout to meet your individual wishes, e.g. through contrast setting, printout of date and time, any type of texts, identification and weighing data, graphics.

## 2 Installation



### Cautionary notes

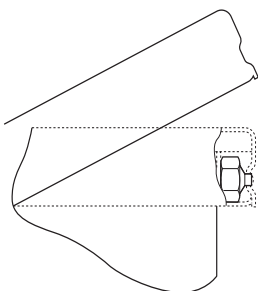
- ▲ Never operate GA46 and GA46-W in hazardous areas.
- ▲ The printers can be made dead only by disconnecting the power plug. The receptacle outlet unit must therefore be in the vicinity of the printer and easily accessible.

### Type of protection

GA46	IP21 D (EN 60529)
GA46-W	splash-proof following IP65 (EN 60529)
	The specified type of protection does <b>not</b> apply to the power plug.

### Caution

The type of protection is assured only if the cover of the GA46 or GA46-W is closed. Only open cover locking of GA46-W using a suitable tool (e.g. ball-point pen).



GA46-W

### Attaching the printer

- Plug data cable into an appropriate interface socket of the weighing terminal.
- Plug in power cable and switch on weighing terminal.

## 3 Configuration

### 3.1 Adjustment work

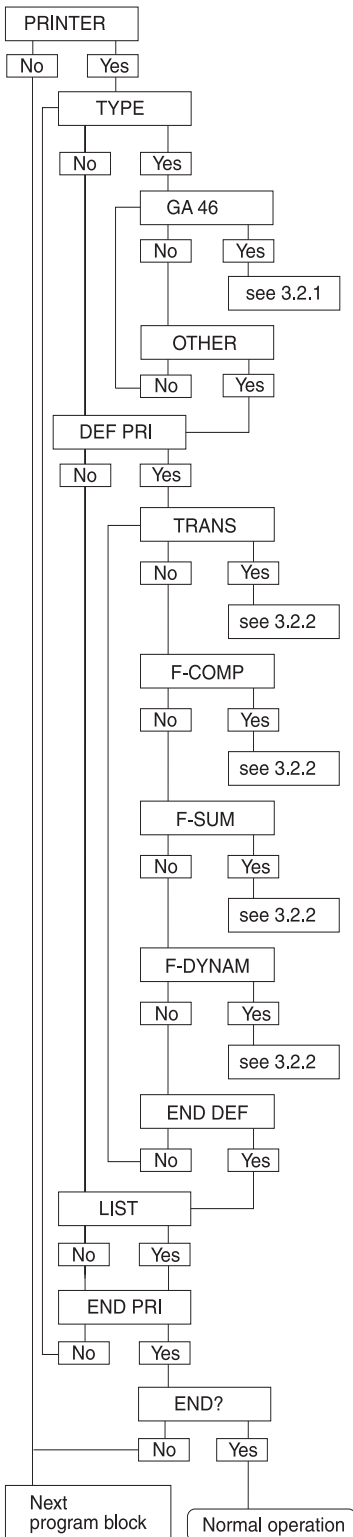
The following settings must be made on the terminal:

1. Select printer GA46 in the master mode.
  - On the terminals ID1 Plus, ID3s and ID7 the parameters for data communication with the GA46 are set and a standard print format assigned to the transfer key automatically.
  - On all other operating terminals the serial RS232 data interface must be configured with the following parameters:

Baud rate	9600
Parity	even
Protocol	XON / XOFF
Bits per character	8
Stop bits	1
2. Configure printing in master mode block GA46:
  - Adjust contrast value of thermal bar if necessary.
  - Configure printing.
  - After replacing the thermal bar or control electronics: Set resistance value.Settings with the terminals ID1 Plus and ID3s are described in chapter 3.2.  
Settings with the terminal ID7 are described in chapter 3.3.

### 3.2 Settings with the terminals ID1 Plus and ID3s

Printer configuration takes place in the PRINTER master mode block. Operator control in this block is the same as in the other master mode blocks in the respective terminal.



- TYPE Select the type of printer
  - GA46 The correct transmission parameters for weighing terminals ID 1 Plus and ID3s are set automatically and a standard printout format is applied to the transfer key.
  - OTHER If you wish to use a different printer rather than the GA46.
- DEF PRI Configuration of the data string to be printed
  - TRANS Data string that is printed when the transfer key is pressed.  
Factory setting ID3s: date, time, code A, code B gross, net, tare  
Factory setting ID1 Plus: gross, net, tare
  - F-COMP Data string that is printed in the "Addition" and "Formula" applications with the ID3s when the function key is pressed briefly.  
Factory setting ID3s: date, time, code A, code B, component, item counter
  - F-SUM Data string that is printed with the ID3s when the function key is pressed for a longer period.  
Factory setting ID3s: date, time, code A, code B, total, item counter
  - F-DYNAM Data string that is printed with the ID3s in the "Dynamic weighing" application when the function key is pressed.  
Factory setting ID3s: date, time, code A, code B, result, item counter
  - FUNCT Data string that is printed with the ID1 Plus when the function key is pressed.  
Factory setting ID1 Plus: gross, net, tare
  - END DEF Terminate configuration of the data string.
- LIST Printout of all application blocks.
- END PRI Terminate configuration of the printer.

### 3.2.1 Contrast and resistance values of the print head

You can set the contrast and resistance value of the print head in the master mode of the weighing terminal.

**CONTRAST** for setting the degree of blackening of the printout and matching to different types of paper  
 0 low contrast  
 ... ..  
 8 high contrast

**RESISTANCE** resistance classes from 0 to 4 are available

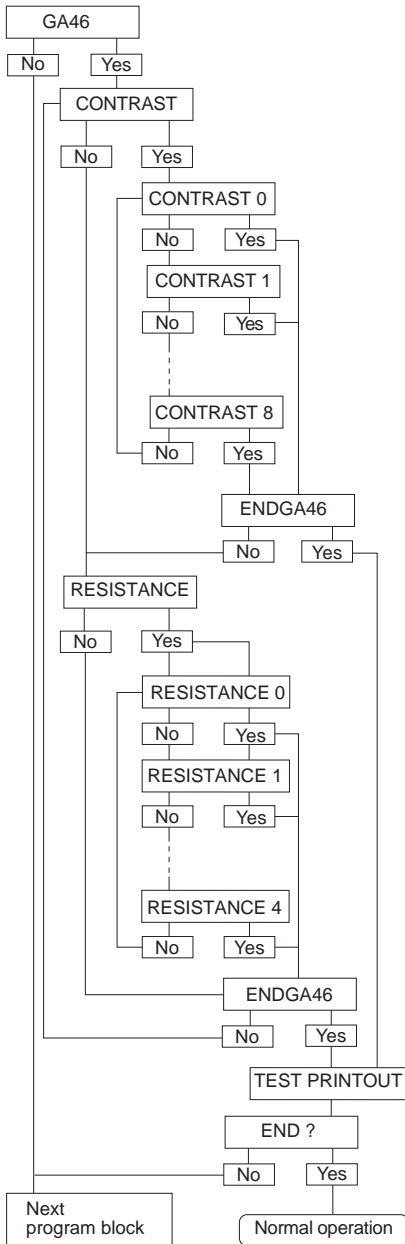
The resistance is adjusted in the factory. After replacement of the print head or control electronics, the resistance value must be reentered.

#### Determining resistance class

- Read off resistance value on print head. To do this, open cover and read off resistance value on the affixed label when the print head is in the operating position.
- Determine resistance class using the following table:

Printed value	Class
– 650	0
650 – 700	1
700 – 750	2
750 – 800	3
800 –	4

**TEST PRINTOUT** On completion of the entries, a test printout is generated automatically.



### 3.2.2 Data string configuration

The procedure for data string configuration is the same for all 4 data strings: TRANS, F-COMP, F-SUM and F-DYNAM.

A data string may contain individual characters or commands from the GA46 instruction set, application blocks or bar codes.

The configuration procedure is as follows once the data string has been selected:

**STD ON** Standard configuration for the keys with the following information: date, time, code A and code B (if assigned), gross, net and tare.

**CLEAR** Erase the old configuration.

If the old configuration is not erased, the data string can be shown and edited, see next page.

#### To enter a new data string

→ Confirm CLEAR with YES; the previously stored data string is erased.

The following options are now available:

**INSERT** To insert a character or block:

A000-0 Enter an application block, see below.

C000-0 Enter an ASCII character or command, see below.

B000-0 Enter a bar code, see page 7.

**PRINT** Test printout; only appears when a data string has been configured.

**DELETE** To delete a character or block; only appears when a data string has been configured.

**ENEDIT** Terminate editing.

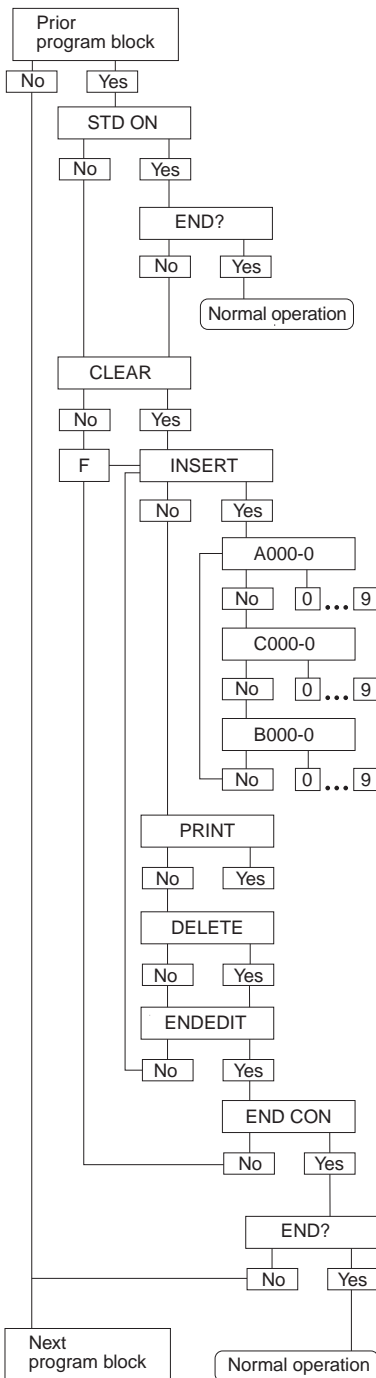
**END CON** Terminate configuration.

#### To enter an application block

- Enter the block number.
- If the application block contains sequence blocks, enter the sequence block number.
- If you wish to print all sequence blocks, enter sequence block number 15 or move the cursor as far to the right as possible.
- Confirm input with ENTER: the next input prompt appears.

#### To enter characters

- Enter an ASCII or control character.
- Enter the number of times the character is to be printed.
- Confirm inputs with ENTER: the next input prompt appears.





**To enter a bar code**

1. Enter the application block number.
2. Enter the sequence block number, cf. enter the application block.
3. For code A/B and ID3s only: select bar code, code 39 always applies for ID1 Plus.  
Possible bar codes for the ID3s:
  - Code 39
  - EAN 13
  - Code 2 of 5
  - Code 2 of 5 interleaved.
4. Confirm input with ENTER: the next input prompt appears.

**To terminate INSERT**

→ Confirm with input prompt with ENTER immediately, without entering a block number or a character.

**To edit an existing data string**

If a print has been stored in the memory, it is possible to subsequently edit any position of the existing data string:

1. Bypass CLEAR with NO:
  - the previously entered data string is retained
  - the first character or the first block in the data string is displayed
  - the two red LEDs on the left-hand side of the ID1 Plus and ID3s also light up

**Examples****Display****Printout**

A012		Content of application block 012
C042 – 48		48 times ASCII-character 042
B054 – 2 2		Bar code EAN 13 with content of application block 054, sequence block 2

2. Use the right/left cursor keys to "scroll" through to the position that you wish to edit:
  - one of the LEDs on the ID1 Plus and ID3s traces the movement and indicates the position in the string
  - the end of the string is indicated by END BUF
  - if you continue to scroll to the right, the beginning of the data string appears again
3. Press the F key to start editing:
  - the inserted character / block is inserted in front of the marked position
4. The editing procedure is similar to that for entering a new data string, see above.
5. Press the ENTER key to terminate editing and continue with END CON.

**Notes**

- If an application block has not been assigned, it will not be printed out.
- A data string in the ID1 Plus and ID3s may comprise up to 40 blocks or up to 60 different characters.
- Apart from EAN 13, all bar codes are printed out lengthwise.
- The bar code is encoded in the following manner when the individual string elements are displayed:

0	Code 39
2	EAN 13
3	Code 2 of 5
4	Code 2 of 5 interleaved

### 3.3 Settings with the terminal ID7

The printer is configured in the master mode block INTERFACES. Operation in this block is the same as for the other master mode blocks of the weighing system.

GA46	Set printer
CONFIGURATION PRINT OUTS  TRANSFER KEY CODE A KEY ...	<p>Configuration of the printouts assigned to the individual keys.            A list of the configurable keys with the current configuration can be printed out under PRINT LIST, LIST KEY CONFIGURATION.</p> <p>The following settings are possible for each key:</p> <ul style="list-style-type: none"> <li>• DELETE ALL</li> <li>• STANDARD SETTING              The standard setting is key-specific and can be printed out under CHANGE CONFIGURATION with EDIT, PRINT.</li> <li>• CHANGE CONFIGURATION (see sections 3.3.1 – 3.3.3)</li> </ul> <p><b>Remark</b>            The selectable keys are dependent of the Pac used.</p>
AUTOPRINT	<p>When AUTOPRINT ON is selected, the key configuration of the transfer key (ENTER key) is automatically printed out for each change in weight &gt; 10 d.            To activate this function in the weighing mode, press the ENTER key once. Then a printout is carried out automatically for each weight change.</p>
PRINT LIST  COMPLETE LIST  LIST BASIC EQUIPMENT  LIST PAC  LIST INTERFACES  LIST KEY CONFIGURATIONS	<p>Print out a list of the TERMINAL/SCALE, PAC, INTERFACE application blocks and configurable keys with the current configuration.</p> <p>Print out a list of the TERMINAL/SCALE application blocks.</p> <p>Print out a list of the PAC application blocks.</p> <p>Print out a list of the INTERFACE application blocks.</p> <p>Print out a list of the configurable keys with the current configurations.</p>
FORMAT EAN 128  01 - EAN         310 - EAN/NET	<p>Specify data string format.</p> <p>Printout of identification data Code A; possible settings:</p> <ul style="list-style-type: none"> <li>• <b>01&lt;N14&gt;</b></li> <li>• 01&lt;N13&gt;&lt;C1&gt;</li> <li>• 010&lt;N12&gt;&lt;C1&gt;</li> <li>• 010&lt;N13&gt;</li> </ul> <p>Printout of identification data Code A and net value; possible settings:</p> <ul style="list-style-type: none"> <li>• <b>019&lt;N12&gt;&lt;C1&gt;310x&lt;N6&gt;</b></li> <li>• 019&lt;N13&gt;310x&lt;N6&gt;</li> </ul> <p>Request for additional entries:            DECIMAL PLACES      Enter number of decimal places for net value.                                             Possible values: x = 0 ... 6                                             Factory setting: as for active scale</p>

<b>GA46</b>	<b>Set printer</b>												
<p>330 - GROSS</p> <p>30 - EAN/QUANTITY</p> <p>Legend</p>	<p>Printout of gross value in following format: 330x&lt;N6&gt; Request for additional entries: DECIMAL PLACES                    Enter number of decimal places for gross value. Possible values: x = 0 ... 6 Factory setting: as for active scale</p> <p>This selection only appears on the ID7 Count. Printout of identification data Code A and pieces; possible settings:</p> <ul style="list-style-type: none"> <li>• <b>019&lt;N12&gt;&lt;C1&gt;30&lt;Nx&gt;</b></li> <li>• 019&lt;N13&gt;30&lt;Nx&gt;</li> </ul> <p>Request for additional entries: SET QUANTITY                    Enter number of places for quantity. Possible values: x = <b>0</b>, 2, 4, 6, 8 x = 0: lowest possible even number of places</p> <p>Nxx    Identification data Code A, xx places C1    Check character, 1 digit, calculated by ID7 N6    Weight value, 6 places Nx    Quantity, x places Factory settings are indicated in <b>bold print</b></p>												
<p>SERVICE</p> <p>SWITCH OFF GA46</p> <p>RESET GA46</p> <p>CONTRAST</p> <p>RESISTANCE</p> <p>CHARACTER SET</p> <p>TEST PRINT</p>	<p>Switch printer on or off.</p> <p>Reset printer. Then the printer is in the same state as after being switched on or off. All data still stored in the receiving buffer are deleted and no longer printed out.</p> <p>Set contrast value of thermal bar, i.e. set the intensity of blackness of the printout and adapt it to different types of paper. Possible values: 0 (low contrast) ... 8 (high contrast) (factory setting: 4)</p> <p>Set the resistance value of the thermal bar The resistance is calibrated at the factory. After replacing the thermal bar or control electronics, the resistance value must be reset. Possible resistance classes: 0 ... 4 (factory setting: 3)</p> <p><b>Determine resistance class</b></p> <ol style="list-style-type: none"> <li>1. Open printer cover.</li> <li>2. Read the resistance value in the working position of the thermal bar off the label and determine the resistance class:</li> </ol> <table border="0" data-bbox="526 1624 981 1825"> <thead> <tr> <th><b>Displayed value</b></th> <th><b>Resistance class</b></th> </tr> </thead> <tbody> <tr> <td>– 650</td> <td>0</td> </tr> <tr> <td>650 – 700</td> <td>1</td> </tr> <tr> <td>700 – 750</td> <td>2</td> </tr> <tr> <td>750 – 800</td> <td>3</td> </tr> <tr> <td>800 –</td> <td>4</td> </tr> </tbody> </table> <p>Select character set for output on printer. The following character sets are available: USA, POLISH, GERMAN and RUSSIAN</p> <p>Trigger a test printout with the above settings.</p>	<b>Displayed value</b>	<b>Resistance class</b>	– 650	0	650 – 700	1	700 – 750	2	750 – 800	3	800 –	4
<b>Displayed value</b>	<b>Resistance class</b>												
– 650	0												
650 – 700	1												
700 – 750	2												
750 – 800	3												
800 –	4												

### 3.3.1 Change configuration

If CHANGE CONFIGURATION is selected for a key in the master mode, the function keys change to the following assignment with which the data string can be displayed and processed:

<<	<	EDIT	↑	>	>>
Display first block in data string	Display previous block in data string	Edit data string and trigger test printout, see 3.3.2	Exit level and return to higher-level block; end configuration	Display next block in data string	Display last block in data string

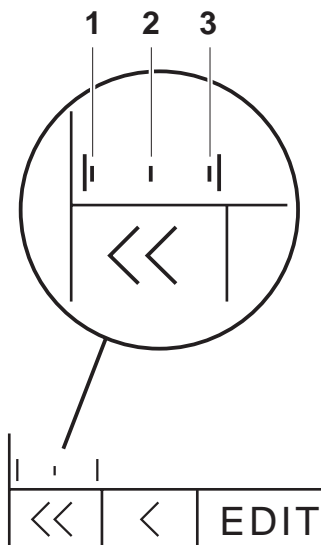
**Example** → To display the next block in the data string, press the > key.

#### Display data string

After selecting CHANGE CONFIGURATION the first block of the configured data string appears.

#### Possible displays

- BLOCK XXX                      Application block
- SPECIAL FUNCTION  
  TYPE SIZE SMALL              Type size small
- SPECIAL FUNCTION  
  TYPE SIZE AVERAGE          Type size average
- SPECIAL FUNCTION  
  TYPE SIZE LARGE              Type size large
- SPECIAL FUNCTION  
  TYPE WIDTH NORMAL          Type width normal
- SPECIAL FUNCTION  
  TYPE WIDTH WIDE              Type width wide
- SPECIAL FUNCTION  
  BLANK LINE                    Blank line
- SPECIAL FUNCTION  
  -----                      Separator line
- SPECIAL FUNCTION  
  \*\*\*\*\*                      Separator line
- SPECIAL FUNCTION  
  +++++                        Separator line
- SPECIAL FUNCTION  
  ADVANCE                      Paper advance
- SPECIAL FUNCTION  
  <BUFFER END>                Appears with the last block of the configured data string



The position of the displayed block in the entire data string is shown in the lower left-hand corner of the terminal.

- 1 The displayed block is the first block of the data string.
- 2 The displayed block is located approximately in the middle of the data string.
- 3 The displayed block is the last block of the data string.

### 3.3.2 Edit data string

When EDIT is selected, the function keys change to the following assignment with which the data string can be processed:

DEL	PRINT	INS	↑		
Remove displayed block from the data string	Test printout of the current configuration	Insert block in the data string, see below	Exit level and return to the higher-level block	—	—

#### Insert block

After pressing the INS key the function keys return to their normal assignment for the master mode.

INS	Insert block in data string
	The data string may contain a maximum of 51 blocks.
CHANGE TYPE SIZE	Change the type size of the following blocks in the data string. The type size applies up to the next block TYPE SIZE. Possible type sizes: SMALL, AVERAGE, LARGE
CHANGE TYPE WIDTH	Change type width of the following blocks in the data string. The type width applies up to the next block TYPE WIDTH. Possible type widths: NORMAL, WIDE
DATE / TIME	Insert the time in the data string. Possible time entries: DATE, DATE + TIME
WEIGHT VALUES	Insert the weight values in the 1st or 2nd unit in the data string.
1. UNIT	Possible weight values: GROSS, NET, TARE
2. UNIT	Possible weight values: GROSS, NET, TARE
BLANK LINE	Insert a blank line in the data string.

<b>INS</b>	<b>Insert block in data string</b> The data string may contain a maximum of 51 blocks.														
SEPARATOR LINE	Insert separator line in the data string. Possible separator lines: -----, * * * * * , + + + + +														
BARCODE CODE 39 ... EAN 128	Insert a bar code in the data string. Select bar code. Possible bar codes: CODE 39, CODE 2/5, CODE 2/5 INTERLEAVED, CODE 128, EAN 8, EAN 13, EAN 28, EAN 29, EAN 29A, EAN 128 Additionally for ID7-Count: EAN 25, EAN 26 For additional entries see page 13.														
BLOCK 000	<p>Enter the number of the application block to be printed and confirm it with ENTER. Enter the next block no. and confirm it with ENTER if necessary.</p> <ul style="list-style-type: none"> <li>For CODE 39, CODE 2/5, CODE 2/5 INTERLEAVED, CODE 128, EAN 8 or EAN 13 note: The application block must contain data and no constants such as the program number.</li> <li>For EAN 25, EAN 26, EAN 28, EAN 29, EAN 29A and EAN 128 the application block no. is automatically entered:</li> </ul> <table border="0"> <thead> <tr> <th><b>Bar code</b></th> <th><b>Application block no.</b></th> </tr> </thead> <tbody> <tr> <td>EAN 25</td> <td>398 for ID7-Count only</td> </tr> <tr> <td>EAN 26</td> <td>399 for ID7-Count only</td> </tr> <tr> <td>EAN 28</td> <td>91/01</td> </tr> <tr> <td>EAN 29</td> <td>92</td> </tr> <tr> <td>EAN 29A</td> <td>93</td> </tr> <tr> <td>EAN 128</td> <td>91/03</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>To end the entry, confirm the entry request with ENTER without making an entry.</li> </ul> <p><b>Remarks</b></p> <ul style="list-style-type: none"> <li>For information on the application blocks, see the operating and installation instructions ID7... weighing terminal.</li> <li>Only application blocks which contain data are valid. If an application block only contains text, the display shows ERROR BARCODE.</li> <li>If the application blocks consist of several subsequent blocks, each subsequent block must be explicitly specified.</li> <li>For Code 39 three application block nos. can be entered, which are then printed next to each other.</li> <li>Except for EAN 25 ... 29A, all bar codes are printed in the landscape format.</li> </ul>	<b>Bar code</b>	<b>Application block no.</b>	EAN 25	398 for ID7-Count only	EAN 26	399 for ID7-Count only	EAN 28	91/01	EAN 29	92	EAN 29A	93	EAN 128	91/03
<b>Bar code</b>	<b>Application block no.</b>														
EAN 25	398 for ID7-Count only														
EAN 26	399 for ID7-Count only														
EAN 28	91/01														
EAN 29	92														
EAN 29A	93														
EAN 128	91/03														



<b>INS</b>	<b>Insert block in data string</b> The data string may contain a maximum of 51 blocks.
APPLICATION BLOCKS BLOCK 000	<p>Insert application blocks in the data string.</p> <p>Enter the number of the application block to be printed and confirm with ENTER. Enter the subsequent block no. and confirm it with ENTER if necessary.</p> <ul style="list-style-type: none"> <li>• To print all subsequent blocks, enter subsequent block no. 0.</li> <li>• To end the entry, confirm the entry request with ENTER without making an entry.</li> </ul> <p><b>Remarks</b></p> <ul style="list-style-type: none"> <li>• If an application block is not assigned, it will not be printed out in the weighing mode.</li> <li>• For information on the application blocks, see the operating and installation instructions for ID7... weighing terminal.</li> </ul>

### 3.3.3 End configuration

1. Press the ↑ key, if necessary several times, until the question SAVE CHANGES appears.
2. Confirm SAVE CHANGES with YES or NO, then the display shows the configured key.

### 3.4 Settings with the terminal ID7-2000

The printer is configured in the INTERFACES master mode block. Operation in this block is the same as for the other master mode blocks of the weighing system.

GA46	Set printer
CONFIGURATION PRINTOUTS  TRANSFER KEY CODE A KEY ... CODE D KEY DYNAMIC KEY PAC-DEPENDENT KEYS	Configuration of the printouts assigned to the individual keys. For each offered key, the current configuration can be printed out with the key sequence CHANGE CONFIGURATION, F▶ (possibly several times) and PRINT.  Configuration options: <ul style="list-style-type: none"> <li>• DELETE ALL                      All blocks of the data string are deleted.</li> <li>• STANDARD SETTING              Key-specific.</li> <li>• CHANGE CONFIGURATION        See page 16.</li> <li>• PAPER FEED                      Adjustment range: 0 ... 9 lines.</li> <li>• REPORT ON/OFF                  Switch key print-out on/off.</li> </ul>
AUTOPRINT	Switch automatic printout for transfer key on/off. When AUTOPRINT ON is selected, a printout for the transfer key is automatically created for each weight change > x digits. Once the option AUTOPRINT ON has been confirmed with OK, the operator is requested to enter x: Possible settings:                      1 ... 255 digits (factory setting: 10 digits)
PRINT LIST  COMPLETE LIST  LIST AB     LIST SCALE LIST PAC  LIST INTERFACES LIST KEY CONFIGURATION	Print out a list of all application blocks, the current settings and the configurable keys with the current configuration. The list includes all installed components.  Print out list of application blocks; options for printout:  <ul style="list-style-type: none"> <li>• STYLE                       Designation and content in justified style</li> <li>                                  Designation and content in two lines, justified style</li> <li>• PRINTOUT               <ul style="list-style-type: none"> <li>– STANDARD                      Print out all application blocks with the exception of the memories xxx_yyy.</li> <li>– CONFIGURE                      Select application blocks for printing; with CONFIGURE the contents of the memories xxx_yyy can also be printed.</li> </ul> </li> </ul> Print out the settings for the connected weighing platforms.  Print out the application blocks and settings for the application software. This block does not appear for the weighing terminal ID7-Base.  Print out the settings for the installed interfaces.  Print out a list of the configurable keys with the current configuration.



<b>GA46</b>	<b>Set printer</b>
FORMAT EAN 128	Specify data string format. Factory settings are indicated in <b>bold print</b>
01 - EAN	Printout of identification data Code A; possible settings: <ul style="list-style-type: none"> <li>• <b>01&lt;N14&gt;</b></li> <li>• 01&lt;N13&gt;&lt;C1&gt;</li> <li>• 010&lt;N12&gt;&lt;C1&gt;</li> <li>• 010&lt;N13&gt;</li> </ul>
310 - EAN/NET	Printout of identification data Code A and net value; possible settings: <ul style="list-style-type: none"> <li>• <b>019&lt;N12&gt;&lt;C1&gt;310x&lt;N6&gt;</b></li> <li>• 019&lt;N13&gt;310x&lt;N6&gt;</li> </ul> Request for additional entries: DECIMAL PLACES            Enter number of decimal places for net value. Possible values: x = 0 ... 6 Factory setting: as for active scale
330 - GROSS	Printout of gross value in following format: 330x<N6> Request for additional entries: DECIMAL PLACES            Enter number of decimal places for gross value. Possible values: x = 0 ... 6 Factory setting: as for active scale
30 - EAN/QUANTITY	This selection only appears on the ID7 Count. Printout of identification data Code A and pieces; possible settings: <ul style="list-style-type: none"> <li>• <b>019&lt;N12&gt;&lt;C1&gt;30&lt;Nx&gt;</b></li> <li>• 019&lt;N13&gt;30&lt;Nx&gt;</li> </ul> Request for additional entries: SET QUANTITY                Enter number of places for quantity. Possible values: x = <b>0</b> , 2, 4, 6, 8 x = 0: lowest possible even number of places
Legend	Nxx    Identification data Code A, xx places C1     Check character, 1 digit, calculated by ID7 N6     Weight value, 6 places Nx     Quantity, x places

<b>GA46</b>	<b>Set printer</b>												
SERVICE													
SWITCH ON/ SWITCH OFF	Switch printer on or off.												
RESET GA46	Reset printer. Then the printer is in the same state as before switching on or off. All data still saved in the receiving buffer are deleted and no longer printed.												
CONTRAST	Set the contrast values of the thermal bar, i.e. set the density of the printout and adjust to various types of paper. Possible values: 0 (weak contrast) ... 8 (strong contrast) (factory setting: 4)												
RESISTANCE	Set the resistance value of the thermal bar. The resistance is calibrated at the factory. After replacing the thermal bar or control electronics, the resistance value must be reset. Possible resistance classes: 0 ... 4 (factory setting: 3) <b>Determine resistance class</b> 1. Open printer cover. 2. Read the resistance value in the working position of the thermal bar off the label and specify the resistance class: <table border="1" data-bbox="496 958 951 1160"> <thead> <tr> <th>Displayed value</th> <th>Resistance class</th> </tr> </thead> <tbody> <tr> <td>– 650</td> <td>0</td> </tr> <tr> <td>650 – 700</td> <td>1</td> </tr> <tr> <td>700 – 750</td> <td>2</td> </tr> <tr> <td>750 – 800</td> <td>3</td> </tr> <tr> <td>800 –</td> <td>4</td> </tr> </tbody> </table>	Displayed value	Resistance class	– 650	0	650 – 700	1	700 – 750	2	750 – 800	3	800 –	4
Displayed value	Resistance class												
– 650	0												
650 – 700	1												
700 – 750	2												
750 – 800	3												
800 –	4												
CHARACTER SET	Select the character set for output on the printer. The following character sets are available: USA, POLISH, GERMAN and RUSSIAN												
TEST PRINT	Trigger a test printout with the above settings.												

### Change configuration

#### Function keys

The function keys are assigned in CHANGE CONFIGURATION as follows:

	<	>	F▶	ADD	↑
	Display previous entry	Display next entry	Select function of function key F5: ADD, INS, etc.	ADD INS EDIT DEL PRINT	Return to next higher level

The printout can be edited with function key F5:

ADD	Adds a new entry at the end of the printout.
INS	Inserts a new entry in front of the displayed entry.
EDIT	Changes into the EDIT mode for the displayed entry to edit the entry.
DEL	Deletes the displayed entry.
PRINT	Creates a key printout.

**EDIT mode**

**Function keys** The following function keys are available in the EDIT mode:

<-->	<	>	F▶	SAVE	↑
Select parameters	Set parameters, scroll back	Set parameters, scroll forward	Select function of function key F5: STORE, EDIT	Confirm changes and return to higher level	Cancel EDIT mode and return to higher level; changes are not stored

**Display page** The setting of the parameters of an entry appears in a clear layout on a display page (example):

TRANSFER KEY	[EDIT]	(2/7)
TYPE: AB	FONT: A	STYLE: <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
CRLF: YES	FILL: NO	PAD: 01
DATA:		011-013

**First display line** Information for orientation in an entry










- Key name.
- Mode: EDIT, INS or ADD.
- Number of the display entry and total number of entries for the current printout.

**TYPE parameter** Selection possibilities:




AB	Output content of an application block with or without designation.
TEXT	Print out any desired text.
CHRn	Insert n of any desired ASCII characters in the line, e.g. for tables; selection of character via the DATA parameter.
LINE	Blank or separator line with any desired alphanumeric character.
DB	Accesses a database field. When a field is printed out, all entries of the field are listed. The option DB is only available when the software application supports access to a database. The offered database fields are application-specific.

**FONT parameter** FONT Setting for the font type and size:  
Small (A), medium (A), large (A), small+bold (A), medium+bold (A), large+bold (A), Barcode.




**STYLE parameter** STYLE determines in which format the designation and content of the application block are printed; adjustment possibilities:

TYPE/FONT	STYLE
AB DB	 Designation and content in justified style
	 Designation and content in two lines, justified style
	 Designation and content separated with extra blank spaces
	 Content alone, left-justified
	 Content alone, centred
	 Content alone, right-justified
TEXT	 Left-justified
	 Centred
	 Right-justified
BARCODE	Code 39, Code 2 of 5, Code 2 of 5 interleaved, Code 128, EAN 8, EAN 13, EAN 25, EAN 26, EAN 28, EAN 29, EAN 29A, EAN 128. EAN 25 and EAN 26 only appear for ID7 Count. The following application blocks are output especially for the barcode: ABO91.01: EAN 28 ABO91.02...04: EAN 128 ABO92: EAN 29 ABO93: EAN 29A

**CRLF parameter** Force line feed; the CRLF parameter is only available for:

-  Text, left-justified
-  Content alone, left-justified
-  Designation and content separated with extra blank spaces
- Type CHRn



**FILL parameter** Show content with leading blank spaces up to maximum available length; the FILL parameter is only available for:

-  Designation and content separated with extra blank spaces
-  Content alone, left-justified
-  Content alone, centred

**PAD parameter** Print designation and content separated with x blank spaces.

Possible settings: 0 ... 63 extra blank spaces.

The PAD parameter is only available for:

-  Designation and content separated with extra blank spaces
-  Content alone, left-justified

**DATA/FIELD parameter** Depending on the TYPE selected, DATA or FIELD is available.

TYPE	DATA/ FIELD	ENTRY
LINE	DATA	1 alphanumeric character Entry also possible as ASCII code, see below
AB	DATA	Number of application blocks to be output: xxx The application block can be further specified with the following keys: AB_EXT: _ For selecting memories: xxx_yyy SUB-BLK: . For selecting a sub-block: xxx.z or xxx_yyy.z RANGE: - For entering a range: xxx-xxx or xxx_yyy-yyy
CHRn	DATA	1 alphanumeric character Entry also possible as ASCII code, see below
TEXT	DATA	Alphanumeric characters
DB	FIELD	Select database field

**Entry of  
DATA parameter**

To enter data or select database fields, the EDIT mode must be active.

1. Press **F▶** key, repeat if necessary until the assignment of the F5 key changes to EDIT.
2. Press the EDIT key; an input mask appears.
3. Enter data in the format and with the keys offered.
4. Complete entry with ENTER.

**Enter ASCII code for LINE and CHRn parameters**

1. Open the entry mask with the EDIT key.
2. Press the +/- key and enter the ASCII code numerically.
3. Complete the numeric entry with the +/- key.
4. Complete entry with ENTER.

### 3.5 Printer command set for the GA46 printer

Command (dec)	Description
10	Line feed
12	Form feed
13 10	Line feed with printout of the inputted data
14	Switch on double printing width (current line), wide type
15	Switch off double printing width, normal type
27 35 36	Reset to factory setting All configurable parameters of the printer are reset to their default setting, a test printout is generated with the active settings. New parameter values must then be set. If the print head has been replaced, the resistance value must be reset.
27 64	Reset Following this command, the printer is in the same condition as after switching on. All data stored in the receive buffer are cleared and no longer printed out.
27 66 n	Bar code n=1 Code 39, see comments n=2 EAN8 n=3 EAN13 n=4 Code128/EAN128 Encoded data incl. starting and control characters, but without test and stop characters n=5 Code 2 of 5 n=6 Code 2 of 5 interleaved n=7 Code128 ASCII data, no control characters, only characters used in text n=8 EAN128 ASCII data, no control characters, only characters used in text
27 67 n	Define page length, n=0...255, after n lines, a form feed follows automatically n=0 Printout without page formatting
27 72 n	Define character height, n=1, 2, 3 (Default setting: n=2)
27 73	Send identification After this command the printer sends the current software version No., e.g. "ID02-0-0102".
27 75 n	Set contrast of the printout, n=0...8 (Default setting: n=4) A higher contrast value results in a blacker printout.
27 82 n	Enter resistance class of the print head, depending on the value printed on the print head, n=0...4, for determination of the resistance class, see table on chapter 3.2.1.
27 84	Test printout With printout of the set configurable parameters, interface parameters and version number of the software.

Command (dec)	Description
27 86 BITMAP	Graphics printout The data following "27 86" are treated as a bitmap file. Black and white graphics up to 64 KB are possible. The graphics are printed out immediately and are <b>not</b> stored. The graphics must have a width of 384 points.
27 87	Load logo The data following "27 87" are treated as a bitmap file. Black and white graphics up to 23 KB with a width of 384 points are possible. The graphical representation is stored in the printer and printed out after every "27 88" command. The logo remains stored until: <ul style="list-style-type: none"> <li>• a new logo is loaded</li> <li>• a bar code needs to be printed out</li> <li>• a graphical representation is loaded</li> <li>• the printer is switched off</li> </ul>
27 88	Print logo
27 94 n	Select character set: n=0 Character set USA n=1 Character set Poland n=2 Character set Germany n=3 Character set Russia

**Notes**

- The string terminator C<sub>R</sub>L<sub>F</sub> (13 10 dec.) must end a command.
- Always enter the entry parameter n as decimal value!

**Comments on bar code CODE 39**

- The CODE 39 bar code is printed out lengthways.
- Up to 3 bar codes can be printed side by side.

Separation of the bar codes Horizontal tabulator H<sub>T</sub> (09 dec)

Closure of the bar codes C<sub>R</sub>L<sub>F</sub> (13 10 dec)

## 4 Inserting/changing the paper roll

The GA46/GA46-W printers are dot matrix printers and may be used only with METTLER TOLEDO thermal paper, see optional equipment.

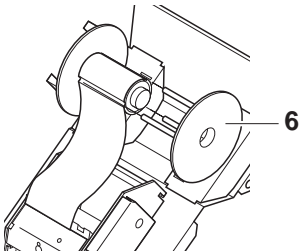
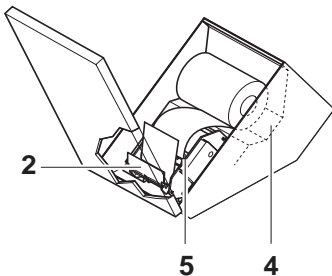
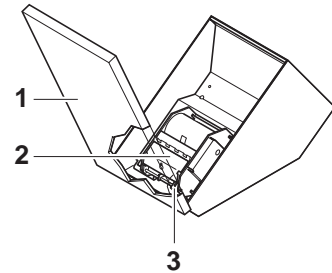
- Raise cover (1) and press release lever (3) downward. Swing print head (2) forward.
- Remove empty spool of used roll.
- Insert the new paper roll in the paper compartment (4) so that the leading edge of the paper runs from the bottom to the top.
- Push leading edge of paper into the paper guide (5) until it emerges under the print head (2). For better, easier threading of the paper, first cut leading edge diagonally.
- Pull out paper until it is taut.
- Reengage print head by pressing it gently in the middle.

### GA46: Routing paper outward

- Tear off beginning of strip at the edge of the print head.
- Push cover back in place ensuring that it is properly closed.

### GA46-W: Inserting paper in the winder

- Raise winder as far as it will go.
- Pull off roll holder (6) to the right, if need be remove printed paper roll.
- Wind leading edge of paper upward once around the winder spindle and mount roll holder such that the 3 locking pins engage.
- Push cover back in place ensuring it is properly closed **and** locked.





## 5 Cleaning

### External cleaning

- Clean printer with a damp cloth or sponge.
- Clean plastic cover of GA46-W printer only with antistatic cleaning and preserving agents, otherwise the cover could be scored.
- Remove grease spots or obstinate dirt marks with commercial washing-up or glass cleaning agents.



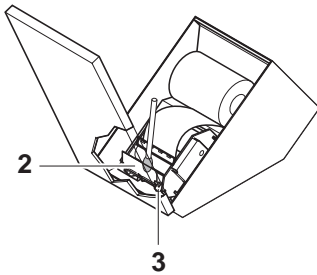
### Caution

- ▲ On no account use concentrated acids and bases, solvents or pure alcohol!
- ▲ Ensure that the interior of the printer does not become wet!
- ▲ If the plastic cover of the GA46-W printer is damaged, the complete cover must be changed. Please contact your METTLER TOLEDO service.

### Cleaning the print head

Use the cleaning pins supplied with the unit to clean the printing head.

- Switch off weighing terminal and open printer cover.
- Press release lever (3) downward, the print head (2) swings forward.
- Carefully clean print head on the side where it comes into contact with the paper.
- Reengage print head by pressing it gently in the middle and close printer cover.



### Note

- Used cleaning pins can be re-used several times.

## 6 What if ...?

<b>Fault</b>	<b>Cause</b>	<b>Rectification</b>
Printer does not print	Paper jam	Reinsert paper and switch printer off then on
	Paper inserted wrongly	Insert paper properly and switch printer off then on
	Parameters for data communication set wrongly	Set contrast correctly
	Parameters for data communication set wrongly	Set parameters on weighing terminal correctly
	Wrong interface selected	Correct selection of the interface on the weighing terminal
	RS232 cable not mounted properly	Mount RS232 cable correctly
Print is not optimum	Print head dirty	Clean print head
	Wrong paper inserted	Insert METTLER TOLEDO paper
	Wrong contrast value set	Set contrast value
	Wrong resistance value set	Perform resistance adjustment
GA46 PAPER OUT No Paper	Run out of paper	Insert paper and confirm with ENTER
	Paper jam	Remedy paper jam and confirm with ENTER
		<p><b>Note</b></p> <ul style="list-style-type: none"> <li>• If the message is not automatically deleted when the paper is inserted, press the ENTER key.</li> <li>• Characters printed after the end of the paper are lost until the GA46 recognizes the paper end.</li> </ul>

## 7 Technical data / Optional equipment

### 7.1 Technical data

<b>Line voltage</b>	100 VAC – 240 VAC, 50/60 HZ 170 mA – 110 mA
<b>Power cable</b>	Grounding plug with directly grounded conductor, length approx. 2.5 m
<b>Temperature range</b>	-10 °C – +40 °C
<b>Interface cable</b>	RS232 cable, permanently mounted, length 2.5 m (standard) or 0.4 m (terminal and printer mounted on the printer-terminal adapter)
<b>Printing width</b>	48 characters per line in normal mode 24 characters per line in expanded mode

### 7.2 Optional equipment

		<b>Order No.</b>
<b>Thermal paper (single)</b>	l = 40 m, w = 62.5 mm	00 503 702
<b>Labels (continuous)</b>	l = 15 m, w = 62.5 mm	00 504 144
<b>Wall bracket, stainless</b>	for wall mounting of the GA46	00 504 130
<b>Printer-terminal adapter</b>	Printer-terminal adapter for fastening of all ID terminals to the wall bracket or the bench and floor stand	00 208 264
<b>Cover for GA46</b>		00 507 224
<b>Adapter cable</b>	for attachment to PC interface RS232 8-pin/9-pin D-sub	00 208 668
<b>ID/PC Expert</b>	Service program for setting the resistance and contrast of the thermal strip Printout formatting program via PC for ID1 Plus, ID3s and ID7 3.5" HD floppy discs	22 000 177
<b>Connection cable</b>	for connecting the ID terminals to the PC interface in conjunction with ID/PC Expert, RS232C, 9-pin, female	00 504 376
<b>Cleaning kit</b>	10 cleaning pins	00 504 179

## 8 Table of representable characters

HEX	dec	ASCII D US*	HEX	dec	ASCII D US*	HEX	dec	ASCII D US*	HEX	dec	ASCII D US*	HEX	dec	ASCII D US*
00	0	NUL	34	52	4	68	104	h	9C	156	€	D0	208	⌘
01	1	SOH	35	53	5	69	105	i	9D	157	¥	D1	209	⌘
02	2	STX	36	54	6	6A	106	j	9E	158	⌘	D2	210	⌘
03	3	ETX	37	55	7	6B	107	k	9F	159	f	D3	211	⌘
04	4	EOT	38	56	8	6C	108	l	A0	160	á	D4	212	⌘
05	5	ENQ	39	57	9	6D	109	m	A1	161	í	D5	213	⌘
06	6	ACK	3A	58	:	6E	110	n	A2	162	ó	D6	214	⌘
07	7	BEL	3B	59	;	6F	111	o	A3	163	ú	D7	215	⌘
08	8	BS	3C	60	<	70	112	p	A4	164	ñ	D8	216	⌘
09	9	HT	3D	61	=	71	113	q	A5	165	Ñ	D9	217	⌘
0A	10	LF	3E	62	>	72	114	r	A6	166	ª	DA	218	⌘
0B	11	VT	3F	63	?	73	115	s	A7	167	º	DB	219	■
0C	12	FF	40	64	§ @	74	116	t	A8	168	¿	DC	220	■
0D	13	CR	41	65	A	75	117	u	A9	169	⌘	DD	221	■
0E	14	SO	42	66	B	76	118	v	AA	170	⌘	DE	222	■
0F	15	SI	43	67	C	77	119	w	AB	171	½	DF	223	■
10	16	DLE	44	68	D	78	120	x	AC	172	¼	E0	224	α
11	17	DC1	45	69	E	79	121	y	AD	173	ı	E1	225	β
12	18	DC2	46	70	F	7A	122	z	AE	174	«	E2	226	Γ
13	19	DC3	47	71	G	7B	123	ä {	AF	175	»	E3	227	Π
14	20	DC4	48	72	H	7C	124	ö	BO	176	⌘	E4	228	Σ
15	21	NAK	49	73	I	7D	125	ü }	B1	177	⌘	E5	229	σ
16	22	SYN	4A	74	J	7E	126	ß ~	B2	178	⌘	E6	230	μ
17	23	ETB	4B	75	K	7F	127	DEL	B3	179		E7	231	τ
18	24	CAN	4C	76	L	80	128	Ç	B4	180	⌘	E8	232	φ
19	25	EM	4D	77	M	81	129	ü	B5	181	⌘	E9	233	θ
1A	26	SUB	4E	78	N	82	130	é	B6	182	⌘	EA	234	Ω
1B	27	ESC	4F	79	O	83	131	â	B7	183	⌘	EB	235	δ
1C	28	FS	50	80	P	84	132	ä	B8	184	⌘	EC	236	∞
1D	29	GS	51	81	Q	85	133	à	B9	185	⌘	ED	237	∅
1E	30	RS	52	82	R	86	134	ã	BA	186	⌘	EE	238	ε
1F	31	US	53	83	S	87	135	ç	BB	187	⌘	EF	239	∩
20	32	SP	54	84	T	88	136	ê	BC	188	⌘	FO	240	≡
21	33	!	55	85	U	89	137	ë	BD	189	⌘	F1	241	±
22	34	"	56	86	V	8A	138	è	BE	190	⌘	F2	242	≥
23	35	#	57	87	W	8B	139	ï	BF	191	⌘	F3	243	≤
24	36	\$	58	88	X	8C	140	î	C0	192	⌘	F4	244	[
25	37	%	59	89	Y	8D	141	ì	C1	193	⌘	F5	245	]
26	38	&	5A	90	Z	8E	142	Ä	C2	194	⌘	F6	246	÷
27	39	´	5B	91	Ä [ \ ]	8F	143	Å	C3	195	⌘	F7	247	≈
28	40	(	5C	92	Ö	90	144	É	C4	196	⌘	F8	248	°
29	41	)	5D	93	Ü	91	145	æ	C5	197	⌘	F9	249	•
2A	42	*	5E	94	^	92	146	Æ	C6	198	⌘	FA	250	·
2B	43	+	5F	95	~	93	147	ô	C7	199	⌘	FB	251	√
2C	44	,	60	96	,	94	148	ö	C8	200	⌘	FC	252	n
2D	45	-	61	97	a	95	149	ò	C9	201	⌘	FD	253	²
2E	46	.	62	98	b	96	150	û	CA	202	⌘	FE	254	.
2F	47	/	63	99	c	97	151	ù	CB	203	⌘	FF	255	
30	48	0	64	100	d	98	152	ÿ	CC	204	⌘			
31	49	1	65	101	e	99	153	Ö	CD	205	⌘			
32	50	2	66	102	f	9A	154	Ü	CE	206	⌘			
33	51	3	67	103	g	9B	155	ç	CF	207	⌘			

\*Entries in the US column only if different from German character set (D)

## Character set Poland (852 Slavic/Latin II, dec and ASCII)

0	◊	32		64	Ⓔ	96	˘	128	Œ	160	á	192	Ł	224	Ó
1	☒	33	!	65	Ⓐ	97	a	129	ü	161	í	193	ł	225	õ
2	Ⓢ	34	"	66	B	98	b	130	é	162	ó	194	T	226	ô
3	♥	35	#	67	C	99	c	131	â	163	ú	195	†	227	ń
4	♦	36	\$	68	D	100	d	132	ä	164	ą	196	-	228	ń
5	♣	37	%	69	E	101	e	133	û	165	ą	197	†	229	ñ
6	♠	38	&	70	F	102	f	134	é	166	ż	198	Ǻ	230	ś
7	•	39	'	71	G	103	g	135	ś	167	ż	199	ǻ	231	ś
8	◼	40	(	72	H	104	h	136	ł	168	ę	200	Ⓜ	232	ŕ
9	◇	41	)	73	I	105	i	137	ë	169	ę	201	Ⓝ	233	ú
10	◼	42	*	74	J	106	j	138	ő	170		202	Ⓜ	234	ř
11	♂	43	+	75	K	107	k	139	ó	171	ź	203	Ⓜ	235	ů
12	♀	44	,	76	L	108	l	140	î	172	č	204	Ⓜ	236	ý
13	♪	45	-	77	M	109	m	141	ž	173	š	205	=	237	ý
14	♫	46	.	78	N	110	n	142	Ǻ	174	«	206	Ⓜ	238	ť
15	*	47	/	79	O	111	o	143	ć	175	»	207	⊗	239	ř
16	▶	48	0	80	P	112	p	144	é	176		208	đ	240	-
17	◀	49	1	81	Q	113	q	145	ĺ	177		209	đ	241	“
18	↕	50	2	82	R	114	r	146	í	178		210	ď	242	”
19	!!	51	3	83	S	115	s	147	ô	179		211	ë	243	”
20	¶	52	4	84	T	116	t	148	ö	180		212	ď	244	”
21	§	53	5	85	U	117	u	149	ľ	181	á	213	ň	245	š
22	-	54	6	86	V	118	v	150	ĩ	182	â	214	í	246	÷
23	‡	55	7	87	W	119	w	151	š	183	ě	215	î	247	„
24	↑	56	8	88	X	120	x	152	ś	184	š	216	ě	248	°
25	↓	57	9	89	Y	121	y	153	ö	185	š	217	ĵ	249	…
26	→	58	:	90	Z	122	z	154	ü	186	š	218	ř	250	•
27	←	59	;	91	[	123	{	155	ř	187	š	219		251	ů
28	└	60	<	92	\	124		156	č	188	š	220		252	ř
29	↔	61	=	93	]	125	}	157	ł	189	ž	221	š	253	ř
30	▲	62	>	94	^	126	~	158	x	190	ž	222	ů	254	■
31	▼	63	?	95	_	127	△	159	č	191	ř	223		255	■

<b>Mettler-Toledo (Albstadt) GmbH</b>		<b>D-72458 Albstadt</b>	<b>T ++49-7431-14 0</b>	<b>F -14 232</b>
<b>AT</b>	<b>Mettler-Toledo Ges.m.b.H.</b>	1100 Wien	T ++43-1-604 19 80	F -604 28 80
<b>AU</b>	<b>Mettler-Toledo Ltd.</b>	Victoria 3207	T ++61-3-9646 45 51	F -9645 39 35
<b>BE</b>	<b>N.V. Mettler-Toledo S.A.</b>	1651 Lot	T ++32-2-334 02 11	F -378 16 65
<b>CH</b>	<b>Mettler-Toledo (Schweiz) AG</b>	8606 Greifensee	T ++41-1-944 45 45	F -944 45 10
<b>CN</b>	<b>Mettler-Toledo (Shanghai) Ltd.</b>	Shanghai 200233	T ++86-21-6485 0435	F -6485 3351
<b>CZ</b>	<b>Mettler-Toledo spol, s.r.o.</b>	100 00 Praha 2	T ++42-2-721 231 63	F -721 231 70
<b>DE</b>	<b>Mettler-Toledo GmbH</b>	35353 Giessen	T ++49-641-50 70	F -507 129
<b>DK</b>	<b>Mettler-Toledo A/S</b>	2600 Glostrup	T ++45-43 27 08 00	F -43 27 08 28
<b>ES</b>	<b>Mettler-Toledo S.A.E.</b>	08038 Barcelona	T ++34-93 223 22 22	F -223 02 71
<b>FR</b>	<b>Mettler-Toledo s.a.</b>	78220 Viroflay-Cedex	T ++33-1-30 97 17 17	F -30 97 16 00
<b>HK</b>	<b>Mettler-Toledo (HK) Ltd.</b>	Kowloon, Hongkong	T ++852-2744 1221	F -2744 6878
<b>HR</b>	<b>Mettler-Toledo d.o.o.</b>	100 10 Zagreb	T ++385-1-233 6317	F -233 6317
<b>HU</b>	<b>Mettler-Toledo Keresked. KFT</b>	1173 Budapest	T ++36-1-257 98 89	F -256 21 75
<b>IN</b>	<b>Mettler-Toledo India Pvt. Ltd.</b>	Mumbai 400 072	T ++91-22-857 0808	F -857 5071
<b>IT</b>	<b>Mettler-Toledo S.p.A.</b>	20026 Novate Milanese	T ++39-02-33 33 21	F -356 2973
<b>JP</b>	<b>Mettler-Toledo K.K.</b>	Osaka 540	T ++81-6-6949 5917	F -6949 5944
<b>KR</b>	<b>Mettler-Toledo (Korea)</b>	Seoul 135-080	T ++82-2-518 2004	F -518 0813
<b>MY</b>	<b>Mettler-Toledo (M)</b>	47301 Petaling Jaya	T ++60-3-703 2773	F -703 8773
<b>NO</b>	<b>Mettler-Toledo A/S</b>	1008 Oslo 10	T ++47-22-30 44 90	F -32 70 02
<b>NL</b>	<b>Mettler-Toledo B.V.</b>	4000 HA Tiel	T ++31-344-63 83 63	F -63 83 90
<b>PL</b>	<b>Mettler-Toledo Sp.z.o.o.</b>	02-924 Warszawa	T ++48-22-651 92 32	F -651 71 72
<b>RU</b>	<b>Mettler-Toledo AO</b>	101000 Moscow	T ++7-095-921 92 11	F -921 63 53
<b>SE</b>	<b>Mettler-Toledo AB</b>	120 08 Stockholm	T ++46-20-25 58 80	
<b>SG</b>	<b>Mettler-Toledo (S) Pte. Ltd.</b>	Singapore 139944	T ++65-8900011	F -8900012
<b>SK</b>	<b>Mettler-Toledo spol, s.r.o.</b>	831 03 Bratislava	T ++421-7-5252 170	F -5252 173
<b>SL</b>	<b>Mettler-Toledo d.o.o.</b>	1236 Trzin	T ++61-162-1801	F -161-1789
<b>TH</b>	<b>Mettler-Toledo (Thailand)</b>	Bangkok 10310	T ++66-2-719 64 80	F -719 64 79
<b>TW</b>	<b>Mettler-Toledo (Taiwan)</b>	Taipei	T ++886-2-579 5955	F -579 5977
<b>UK</b>	<b>Mettler-Toledo Ltd.</b>	Leicester, LE4 1AW	T ++44-116-235 70 70	F -236 63 99
<b>US</b>	<b>Mettler-Toledo Inc.</b>	Columbus, Ohio 43085	T ++1-614-438 4511	F -438 4755
<b>Other countries: Mettler-Toledo AG</b>		8606 Greifensee	T ++41-1-944 22 11	F -944 31 70

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